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NANTICOKE

ENVIRONMENTAL MANAGEMENT PROGRAM

NETWORK DATA SUMMARY FOR 1980

Report No. ARB-20-82-ARSP

September 1982

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Ontario
Ministry of the Environment

The Honourable
Keith C. Norton, Q.C.,
Minister

Gérard J. M. Raymond
Deputy Minister

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1. INTRODUCTION:

The Nanticoke Environmental Management Program (NEMP) is a co-ordinated study into the impact of industrial development in the Nanticoke area on air quality in the Haldimand-Norfolk region. It is jointly sponsored by the Federal and Provincial governments, Ontario Hydro, Stelco and Texaco. The NEMP monitoring network established in the fall of 1978, was operated throughout 1980 to measure adherence to air quality criteria (AQC) for the protection of human health and comfort as well as that of vegetation, animal life and property. In addition to the NEMP network, Ontario Hydro has been operating an SO_2 network of approximately 16 monitors since 1970 and MOE West-Central Region has been operating gaseous monitors at Cheapside and Simcoe as well as a hi-vol network consisting of 6 samplers.

The Haldimand-Norfolk region is situated on the northern shore of Lake Erie in the midst of a major industrial complex comprised of a thermal generating station, a steel plant and an oil refinery. Ontario Hydro and Texaco operated throughout most of 1980 while Stelco did not commence operations until June. Table 1 outlines the major emission sources and their 1980 emission estimates for sulfur dioxide and particulate matter. Emissions from Ontario Hydro's generating station are released from two 198-metre stacks (separated by 275 m), whereas emissions from Stelco and Texaco emanate from stacks as well as ground sources. Monitoring stations have been located according to criteria that take into account predominant wind patterns and source configuration. The network configuration for 1980 remained the same as for 1979 except for the addition of a total reduced sulfur monitor and a hi-volume sampler at WNW03 and NNW06 respectively. Figure 1 shows the location of monitoring stations and Table 2 lists the parameters monitored at each location.

This report complements the first data report covering network data up to December 1979 (3) and summarizes the data collected by the NEMP network during 1980.

2.0 Gaseous Data Analysis

2.1 Analysis of Sulfur Dioxide (SO_2) Data:

Hourly averaged SO_2 concentrations were monitored at twenty locations during 1980. Sixteen stations were operated by Ontario Hydro, two by MOE's West Central Region and two by the NEMP network. The percentage of valid data for the entire network for 1979 and 1980 was 90.0 and 90.8 respectively. Figure 2 shows the annual frequency distribution of hourly averaged SO_2 concentrations for 1980. Seventy-four percent of the hourly concentrations were in the 0-5 ppb range. Compared to other years (1975-1979), the SO_2 levels in the Nanticoke area show a decrease in 1980. Table 3 summarizes the SO_2 annual average concentrations for individual stations. The annual averaged values at all stations for 1980 were less than half of the annual criterion (20 ppb).

Seasonal frequency distribution of the hourly SO_2 concentrations is shown in Figure 3. As in previous years, SO_2 concentrations were higher during the winter season. Ninety percent of the time the hourly averaged SO_2 concentration (for the winter of 1980) did not exceed 16 ppb. During the spring, summer and fall season, the ninety percentile coincided with 10, 8 and 8 ppb respectively. A similar trend was apparent in previous years, Table 4.

Table 5 summarizes the network exceedances of the hourly AQC (250 ppb). There were eight hours during 1980 when the hourly AQC was exceeded, a reduction over the last five years. There were no exceedances of the daily AQC (100 ppb).

2.2 Analysis of Ozone (O_3) Data:

The annual frequency distribution of the hourly O_3 concentrations for SW37, NNE39 and WNW19 is shown in Figure 4. The annual average ozone concentration was highest at SW37 (33 ppb) and decreased inland, (23 ppb at NNE39) (Table 6).

Seasonal frequency distribution of the hourly O_3 concentrations is shown in Figure 5. Seasonally, ozone levels are higher during the summer. This is due to generally clear skies and higher temperatures during the summer which are conducive to ozone formation. Also the predominant southerly winds bring precursors from across Lake Erie during the summer period.

The hourly AQC for ozone is 80 ppb. During 1980, there were a total of 285 exceedances of the AQC. SW37 had the maximum number of exceedances 225, WNW19 reported 45 and NNE39 reported 15.

2.3 Analysis of Nitrogen Dioxide (NO_2) Data:

NO concentrations were subtracted from NO_x values to obtain the hourly NO_2 values. Nitrogen oxides were measured at five locations, (SW37, NNE39, NO7, WNW19 and NNE10). Annual average NO_2 concentrations were in the 8-12 ppb range (Table 7). The maximum hourly NO_2 concentration (90 ppb) occurred at WNW19. Annual frequency distribution of the hourly NO_2 concentrations is shown in Figure 6. Over 90% of the hourly NO_2 concentrations were below the 20 ppb level. There were no exceedances of the one hour (200 ppb) or the 24 hour (100 ppb) AQC during 1980.

2.4 Analysis of Total Reduced Sulfur (TRS) Data:

The yearly frequency distribution (hourly averaged values) of TRS at NNE10, NNE05, NNW08 and WNW03 is shown in Figure 7. Monitoring at WNW03 began in early November in response to local complaints. In-plant monitoring at Stelco and Texaco suggests that TRS emissions include a large proportion of hydrogen sulfide (H_2S). Ninety-seven percent of the time, the hourly concentrations for the entire network were less than 2 ppb. The yearly average for the network was less than 1 ppb. The maximum hourly concentration (34 ppb) was recorded at NNW08, (Table 8). Wind data prior to and during this occurrence did not implicate any of the major industrial sources. A local source such as a gas well may have been responsible.

2.5 Analysis of Carbon Monoxide (CO) Data:

Two stations in the NEMP network (NNE39 and SW37) monitor carbon monoxide (CO) levels. Figure 8 shows the yearly frequency distribution (hourly averages) CO concentrations for 1980. Carbon monoxide levels are mainly in the 0-2 ppm range (Table 9). The AQC for CO is 30 ppm averaged over 1 hour and 13 ppm averaged over 8 hours. The hourly as well as the eight-hourly AQC was never exceeded during 1980.

2.6 Analysis of Methane (CH_4) Data:

Figure 9 shows the annual network (NNE10, NNE05 and NNW08) frequency distribution of methane (CH_4). The annual average of the CH_4 levels is below 2 ppm (Table 10). NNE05 recorded the maximum hourly CH_4 concentration (5.9 ppm). No air quality criteria presently exist for assessing these results but the levels for CH_4 are near typical 'background' values which have been reported elsewhere (4).

High levels of non-methane hydrocarbons during 1980 were associated with sampling measurement error. The data will be verified and included in the next summary report.

3.0 Airborne Particulates Data:

The particulate monitoring network in the Nanticoke area during 1980 was comprised of 14 hi-vol samplers, operated by NEMP (Figure 10). Glass fibre filters were used at all locations with parallel sampling on Whatman 41 cellulose filters at nine stations. TSP measurements were carried out on the glass fibre filters while a detailed chemical analysis was done on selected Whatman 41 filters. Some of the glass fibre filters were also analysed for polynuclear aromatic hydrocarbons (PAH) and inorganic (C_F) and total carbon (C_T). A six day sampling cycle was used at all stations until the startup of Stelco operations in June. At this time, the hivol samplers at W07 and NW03 were converted to a three day cycle to monitor the Stelco emissions. Sampling periods were 24-hours in duration. The chemical analyses of selected Whatman 41 filters collected during 1980 for the entire NEMP network are listed in Appendix 1. PAH results are not yet available. However, total and free carbon results are listed by station in Appendix 1.

Suspended particulate for 1979 and 1980 are summarized for each station (Table 11). The maximum TSP concentration (486 ug/m^3) occurred at SW37 and is attributed to wind blown dust from the nearby beach. Annual geometric means were in the 30 to 60 ug/m^3 range as they were in 1979. The annual and seasonal frequency distributions of TSP for the entire NEMP network during 1980 are shown in Figures 11 and 12. Monthly geometric means for the 1979 and 1980 NEMP TSP network data are plotted in Figure 13. The monthly trend is similar for both years. TSP levels are highest during the May to September period and lowest during November to April. Elevated TSP during the May to September period are probably due to increased agricultural activity in the area and wind blown dust whereas the low TSP values during November to April are attributed to snow cover.

During 1980 there were no exceedances of the annual AQC (60 ug/m^3) however, there were 5 exceedances of the daily AQC (120 ug/m^3). Four of the five exceedances occurred at SW37. The monitor at this location was probably influenced by the nearby sandy beach and has been relocated at SW40 in early 1981. The remaining exceedance occurred at NW03.

Annual and seasonal nitrate, sulfate, calcium, magnesium and total carbon levels are shown in Table 12. For comparison purposes, 1979 concentrations are also shown. Sulfate and total carbon concentrations are highest during the summer season.

$SO_4^=$ and NO_3^- concentrations are higher for southerly winds than northerly winds (Table 13).

4.0 Precipitation Data:

The NEMP precipitation network collects monthly samples at seven sites in the Nanticoke region (Figure 14). Precipitation samples are analyzed for pH, major ions, some nutrients and trace metals. Chemical analysis results for all 1980 precipitation samples are listed in Appendix 12. Network averaged pH and major ion concentrations are listed in Table 15. The 1979 results are shown for comparison purposes. Sulfate, nitrate and amonium levels decreased in 1980.

Table 16 presents the trace metal concentrations for 1979 and 1980. Except for potassium, trace metal levels were lower in 1980. Zn concentrations which were found to be quite high in 1979, dropped by a factor of 20 in 1980. Elevated Zn concentrations during 1979 were observed at Dufferin North (2.2), Big Creek (2.0) and Villa Nova (2.8 and 2.8 mg/l). If these four values are eliminated from the calculation of the volume weighted mean then the 1979 mean compares well with the 1980 mean. The elevated values in 1979 are most probably due to sampling measurement errors and/or sample contamination.

5.0 Summary:

This report summarizes the 1980 gaseous data collected by the NEMP, Ontario Hydro and MOE West Central Region networks as well as the 1980 particulate and precipitation data collected by the NEMP network.

The hourly (250 ppb) AQC for SO_2 was exceeded only 8 times during 1980. There were no exceedances of the daily (100 ppb) AQC for SO_2. Overall there were 285 exceedances of the ozone AQC (80 ppb one hour average), 225 at SW37,45 at WNW19 and 15 at NNE 39. NO_2 and CO were well below the AQC for each contaminant during 1980. TRS concentrations were in the 0 to 2 ppb range and were similar at all four monitors. The annual average for methane and non methane hydrocarbon was less than 2 ppm during 1980.

The number of independent TSP exceedances of the daily (120 ug/m^3) AQC decreased from 19 in 1979 to 5 in 1980. Sulfate and nitrate concentrations were higher for southerly versus northerly winds.

The average pH for wet deposition in the NEMP network during 1980 was 4.2 compared with 4.1 in 1979.

In general, ambient air quality in the Haldimand-Norfolk region continues to be satisfactory.

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TABLE 1.

SOURCE STRENGTHS (METRIC TONS/YR)

SOURCE	PARTICULATE		SO2	
	1979	1980	1979	1980
ONTARIO HYDRO	1,500	2,000	155,000	144,000
TEXACO	250	260	7,500	6,700
STELCO	—	250[&]	—	2,500[&]

& BASED ON $0.8*10^6$ TONS PER YEAR PRODUCTION

Table 2 Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM#	N-S UTM#	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
SW37	22901	05502	47138	LONG POINT PARK	SO2 (PHILIPS) O3 (BENDIX) NOX (TECO) CO (BENDIX) AUTO AFM (GCA) COH (RAC)	NEMP CONTRACTOR
SW40	22959	05454	47152	BIG CREEK	PRECIP GAUGE (F/P) PRECIP COLLECTOR (SANGAMO) TSP HIVOL (GEN. MET) COMP HIVOL (GEN. MET.)	NEMP CONTRACTOR
W07	22953	05702	47396	DOGS NEST EAST	TSP HIVOL (GEN. MET.) COMP. HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANGAMO) PRECIP GAUGE (F/P)	NEMP CONTRACTOR
W13	22861	05641	47383	PORT DOVER	SO2 (PHILIPS) DATA RECORDER WEST)	HYDRO CTS/NOS
	22056				TSP HI-VOL (GEN. MET.)	MOE/WCR
WNW03	22871	05752	47398	NANTICOKE VILLAGE	SO2 (PHILIPS) DATA RECORDER (WEST) TRS (PHILIPS)	HYDRO CTS/NOS NEMP CONTRACTOR
WNW19	22071	05597	47449	SIMCOE HORTICULTURAL	SO2 (TECO) O3 (BENDIX) NOX (TECO) COH (RAC)	MOE/WCR
WNW20	22872	05596	47485	BLOOMSBURG	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
NW03	22961	05758	47412	NANTICOKE NORTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTOR
NNW08	22881	05744	47456	NANTICOKE ROAD	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
	22905				TRS (PHILIPS) HC (BYRON)	NEMP CONTRACTOR
NNW11	22882	05712	47478	JARVIS	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
	22032				TSP HI-VOL (GEN. MET.)	MOE/WCR
NNW12	22883	05744	47493	JARVIS MET. TOWER	10 m WIND SPEED/DIR (BENDIX) 10 m TEMPERATURE (ROSEMONT) 30 m WIND SPEED/DIR (BENDIX) 85 m WIND SPEED/DIR (BENDIX) 85 m TEMPERATURE (ROSEMONT) 4 DATA RECORDERS (WEST)	HYDRO CTS/NOS
NNW15	22884	05717	47522	LIVINGSTON	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS

Table 2 con't Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM#	N-S UTM#	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
NNW18	22954	05654	47535	VILLA NOVA	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANGAMO)	NEMP CONTRACTOR
NNW06	22963			STELCO NORTH	TSP HI-VOL(GEN. MET.) COMP HI-VOL (GEN. MET.)	NEMP CONTRACTOR
N07	22811	05787	47458	SANDUSK	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
	22906				NOX (TECO)	NEMP CONTRACTOR
	22069				TSP HI-VOL (GEN. MET.)	MOE/WCR
N15	22812	05774	47535	GARNET	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
N17	22951	05768	47548	HAGERSVILLE SOUTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTOR
NNE05	22921	05794	47434	WALPOLE SOUTH	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
	22904				TRS (PHILIPS) HC (BYRON) TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTORS
NNE09	22822	05838	47463	DRY CREEK	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
NNE10	22086	05821	47472	CHEAPSIDE	SO2 (TECO) NOX (TECO) COLL (RAC) TSP HI-VOL	MOE/WCR
NNE10	22903	05821	47472	CHEAPSIDE	TRS (PHILIPS) HC (BYRON) AUTO AEM (GCA)	NEMP CONTRACTOR
NNE16	22823	05872	47518	BALMORAL	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
NNE20	22825	05880	47561	DECEWSVILLE	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NGS
NNE22	22960	05839	47600	DUFFERIN NORTH	TSP HI-VOL PRECIP COLLECTOR (SANGAMO)	NEMP CONTRACTOR
NNE39	22902	05914	47746	RINBROOK WEST	SO2 (PHILIPS) O3 (BENDIX) NOX (TECO) CO (BENDIX) TSP HI-VOL (GEN. MET.) COLL (RAC) PRECIP COLLECTOR (SANGAMO) PRECIP GAUGE (E/P)	NEMP CONTRACTOR

Table 2 con't Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM#	N-S UTM#	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
NE07	22962	05818	47443	DRY CREEK WEST	ACOUSTIC SOUNDER	NEMP CONTRACTOR
NE16	22957	05886	47509	FISHERVILLE NORTH	TSP HI-VOL(GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTOR
NE19	22832	05935	47489	KOHLER ROAD	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
NE27	22956	06026	47527	CANFIELD SOUTH	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAMO) PRECIP GAUGE (F/P)	NEMP CONTRACTOR
NE41	22958	06109	47607	CANBORO EAST	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAMO)	NEMP CONTRACTOR
ENE11	22841	05870	47434	SELKIRK	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
	22831				TSP HI-VOL (GEN. MET.)	MOE/WCR
ENE17	22955	05934	47441	RAINHAM CENTRE SOUTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTOR
ENE18	22842	05950	47445	RAINHAM CENTRE	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS
E04	22952	05822	47388	PEACOCK POINT PARK	TSP HI-VOL (GEN. MET.) COMP HI-VOL (GEN. MET.)	NEMP CONTRACTOR
E05	22851	05831	47380	PEACOCK POINT	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO CTS/NOS

Table 3 Statistical Summary for SO_2 Network (1980)

STATION ID	ARITHMETIC MEAN	MAXIMUM	MINIMUM	PERCENTAGE OF VALID DATA	# OF HOUR MONITORING	NUMBER OF EXCEEDANCES
UNW19	7	90	0	89.26	8732	0
NNE10	5	260	0	97.03	8781	1
N07	4	140	0	95.89	8784	0
N15	3	260	0	84.26	8784	1
NNE05	4	300	0	94.17	8784	2
NNE09	6	250	0	90.32	8784	1
NNE14	6	410	0	93.41	8784	2
NNE20	5	310	0	94.41	8784	1
NE19	5	190	0	92.00	8784	0
ENE11	3	140	0	75.74	8784	0
ENE18	4	100	0	88.00	8784	0
E05	6	110	0	80.77	8784	0
W13	4	110	0	91.89	8784	0
WNW03	4	160	0	95.67	8784	0
WNW20	3	160	0	86.00	8784	0
NNW08	4	230	0	96.55	8784	0
NNW11	4	200	0	95.07	8784	0
NNW15	4	160	0	93.69	8784	0
SW37	3	52	0	93.50	7665	0
NNE39	5	99	0	86.44	6305	0

Values are in ppb

Table 4

SO2 Concentration Not Exceeded During 90% of Hours Monitored

Year	Winter	Spring	Summer	Fall	Annual
1975	15	7	6	12	11
1976	26	8	10	13	15
1977	34	12	9	9	15
1978	23	11	9	15	15
1979	22	12	8	10	14
1980	16	10	8	8	11

Concentrations are in ppb

Table 5

Exceedances of the Hourly SO2 AQC by Station for 1975 - 1980

Station	1975	1976	1977	1978	1979	1980
WNW19						
NNE10				6	3	1
NO7	1	3		2	2	
N15						1
NNE05	—	—	—			2
NNE09	4	4	3	6	1	1
NNE16	4	4	1	2	1	2
NNE17	1		3	—	—	—
NNE20	—	—	—			1
NE10	1	1			—	—
NE19						
ENE11						
ENE18						
E05					1	
W13				1		
WNW03					1	
WNW20		2				
NNW08		3	3	2	1	
NNW11		1	1		1	
NNW15		2	1	1		
SW37	—	—	—			
NNE39	—	—	—			
Total	11	20	12	20	11	8

Hourly AQC for SO2 is 250ppb

— monitor not in operation

Table 6

Ozone (O3) Data Summary by Station

Station Id	Year	Minimum conc	Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
SW37	1979	0	140	30.5	67.5	5917	86
	1980	0	123	32.7	87.4	7678	225
NNE39	1979	0	118	26.9	82.4	6010	34
	1980	0	102	23.1	74.0	6496	15
WNW19	1979	0	148	28.1	95.8	8394	96
	1980	0	99	26.1	93.0	8169	45

Values are in ppb
Hourly AQC for O3 is 80ppb

Table 7

Nitrogen Dioxide (NO2) Data Summary by Station

Station Id	Year	Minimum conc	Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
SW37	1979	0	79	9.0	78.3	5543	0
	1980	0	52	7.0	67.9	6509	0
NNE39	1979	0	83	10.0	93.8	8338	0
	1980	0	63	10.0	98.9	7284	0
NO7	1979	0	57	8.0	96.9	4840	0
	1980	0	57	9.0	58.4	7248	0
WNW19	1979	0	80	10.0	98.7	8686	0
	1980	0	90	12.0	96.3	8763	0
NNE10	1979	0	130	13.0	97.3	8375	0
	1980	0	60	8.0	97.8	7745	0

Values are in ppb
Hourly AQC for NO2 is 200ppb

Table 8

Total Reduced Sulfur (TRS) Data Summary by Station

Station Id	Year	Minimum conc	Maximum conc	Annual avg	% Valid Data	# Monitoring Hours
NNE10	1979	0	25	0.4	69.2	5030
	1980	0	14	0.5	76.0	3886
NNE05	1979	0	60	0.4	74.3	5955
	1980	0	9	0.3	67.9	4462
NNW08	1979	0	8	0.3	49.2	3952
	1980	0	34	0.3	71.3	3733
WNW03	1979	N/O	N/O	N/O	N/O	N/O
	1980	0	11	0.8	61.4	899

N/O Not Operating
Values are in ppb

TABLE 9

Carbon Monoxide (CO) Data Summary by Station (ppm)

Station Id	Year	Minimum conc	Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
SW37	1979	0	6	0.1	90.5	6584	0
	1980	0	2	0.1	90.7	7971	0
NNE39	1979	0	4	0.1	88.4	7089	0
	1980	0	3	0.1	88.7	7176	0

TABLE 10

Methane (CH4) Data Summary by Station (ppm)

Station Id	Year	Minimum conc	Maximum conc	Annual avg	% Valid Data	# Monitoring Hours
NNE10	1979	0	4.6	1.8	55.2	4057
	1980	0.2	2.8	1.4	78.8	6921
NNE05	1979	0.5	8.8	1.5	81.9	6012
	1980	0.9	5.9	1.4	81.0	7116
NNW08	1979	1.2	3.4	1.9	76.8	2820
	1980	0.7	3.2	1.5	78.3	6874

Table II

Total Suspended Particulate (Tsp) Data Summary by Station

Station Id	Year	Minimum conc	Maximum conc	Geometric mean	Standard Deviation	Exceedances of AQC	# Samples
SW37	1979	11	235	46	1.78	9	116
	1980	11	486	52	2.02	4	57
NNE39	1979	8	124	44	1.75	3	96
	1980	9	116	43	1.77	0	56
NNE05	1979	9	103	37	1.76	0	99
	1980	9	103	40	1.69	0	53
N17	1979	8	114	41	1.75	0	112
	1980	5	104	43	1.73	0	62
E04	1979	11	100	34	1.61	0	94
	1980	11	78	34	1.59	0	54
W07	1979	11	172	42	1.63	1	106
	1980	15	99	39	1.57	0	84
NNW18	1979	9	122	39	1.70	1	105
	1980	8	91	37	1.64	0	60
ENE17	1979	10	117	40	1.67	0	97
	1980	11	77	36	1.59	0	47
NE27	1979	10	107	37	1.67	0	97
	1980	11	103	46	1.62	0	62
NE16	1979	9	144	41	1.68	1	109
	1980	9	111	46	1.72	0	58
NE41	1979	12	126	45	1.74	3	98
	1980	9	107	41	1.75	0	62
NNE22	1979	10	110	42	1.70	0	109
	1980	13	110	43	1.63	0	60
NW03	1979	7	126	38	1.79	1	93
	1980	10	122	41	1.64	1	81
NNW06	1979	N/O	N/O	N/O	N/O	N/O	N/O
	1980	14	66	29	1.56	0	24

N/O -- Not Operating
Concentrations are in ug/m3
Daily AQC of Tsp is 120 ug/m3
Annual AQC of Tsp is 60 ug/m3

Table 12

Network Seasonal Distribution of Particulates

	Winter		Spring		Summer		Fall		Annual	
Parameter	1979	1980	1979	1989	1979	1980	1979	1980	1979	1980
	(13)	(48)	(28)	(40)	(65)	(34)	(62)	(29)		
SO4	3.2	5.4	4.5	4.7	7.2	7.5	4.7	3.0	5.3	4.6
	(13)	(48)	(28)	(40)	(62)	(34)	(62)	(29)		
NO3	4.0	3.8	2.8	3.1	1.3	2.5	2.4	2.5	2.1	2.2
	(15)	(48)	(24)	(40)	(45)	(33)	(62)	(27)		
Ca	0.78	0.62	0.76	1.11	0.78	0.86	0.43	0.94	0.53	0.83
	(16)	(48)	(24)	(40)	(46)	(33)	(62)	(27)		
Ms	0.17	0.22	0.20	0.32	0.15	0.19	0.25	0.19	0.21	0.22
	(18)	(40)	(23)	(42)	(43)	(37)	(57)	(29)		
CT	2.7	3.9	3.1	3.7	6.4	6.7	4.3	3.8	4.5	4.4

( ) represents # of cases
concentrations are in us/m3

Table 13

Distribution of Particulates
According to Wind Direction

PARAMETER	SOUTH	NORTH
SO4	7.00	4.90
NO3	3.90	2.90
Ca	1.00	1.36
Ms	.202	.382
CT	4.40	5.70

concentrations are in us/m3
values expressed are geometric means

Table 14 NEMP Precipitation Network - Comparison 1979/80
Major Ion Results

Nemp Network (1979)

PARAMETER	ARITH MEAN	STD DEV	GEO MEAN	MAXIMUM	MINIMUM	# OF SAMPLES	VOL WEIGHTED MEAN
PH	4.0500	.2809	4.0413	5.5000	3.8500	50	4.0457
ACID	4.0867	2.0097	3.5606	8.0000	1.1000	27	4.4401
SCON	83.8367	66.7002	66.4540	289.0000	22.1000	57	61.8100
CL	.9657	.5212	.8200	2.4400	.1900	58	.9995
NH3	.6228	.4946	.4829	2.6200	.1140	65	.6357
NO3	.8502	.4216	.7463	2.2400	.1600	66	.8231
SO4	5.7426	2.6123	5.1098	15.5000	.7000	62	5.7261

NEMP NETWORK (1980)

PARAMETER	ARITH MEAN	STD DEV	GEO MEAN	MAXIMUM	MINIMUM	# OF SAMPLES	VOL WEIGHTED MEAN
PH	4.2455	.2801	4.2367	5.1500	3.8000	63	4.1527
ACID	4.8887	1.9568	4.0818	9.3500	.1000	61	5.5726
SCON	39.1999	12.6780	37.1568	74.5000	18.5000	60	41.7067
CL	.3179	.2149	.2625	.9500	.0800	67	.2264
NH3	.6437	.6637	.5096	5.3000	.1040	64	.5981
NO3	.7167	.2795	.6660	1.5100	.1690	67	.6443
SO4	4.9106	1.6394	4.5386	8.4000	.2500	66	4.6165

Table 15 NEMP Precipitation Network - Comparison 1979/80
Trace Metal Results

PRECIP TR METAL DATA (MG/L)

NEMP NETWORK (1979)

PARAMETER	ARITH MEAN	STD DEV	GEO MEAN	MAXIMUM	MINIMUM	# OF SAMPLES	VOL WEIGHTED MEAN
CA	.7727	.6503	.5767	3.3200	.0400	67	.7150
CD	.0009	.0008	.0007	.0063	.0002	70	.0010
CU	.0118	.0129	.0066	.0600	.0004	70	.0117
FE	.0925	.1288	.0489	.9000	.0080	70	.0692
K	.1243	.1386	.0931	1.0000	.0300	69	.1154
MG	.1970	.1962	.1421	1.1200	.0200	67	.1865
MN	.0090	.0048	.0078	.0240	.0020	66	.0091
NA	.2588	.3637	.1754	2.5000	.0500	69	.1878
NI	.0033	.0033	.0023	.0160	.0005	70	.0029
PB	.0104	.0058	.0092	.0420	.0020	70	.0102
ZN	.2457 (.1122)	.5649 (.1357)	.0679 (.0541)	2.8000 (.60)	.0060	70 (66)	.2238 (.0944)

PRECIP TR METAL DATA (MG/L)

NEMP NETWORK (1980)

PARAMETER	ARITH MEAN	STD DEV	GEO MEAN	MAXIMUM	MINIMUM	# OF SAMPLES	VOL WEIGHTED MEAN
CA	.7560	.5625	.5671	2.2000	.0100	67	.5165
CD	.0063	.0011	.0003	.0063	.0001	64	.0004
CU	.0051	.0014	.0018	.0090	.0010	64	.0020
FE	.0551	.0703	.0344	.3900	.0031	65	.0365
K	.0847	.1453	.0507	1.1200	.0080	68	.0718
MG	.1905	.1880	.1335	.9900	.0350	67	.1347
MN	.0097	.0098	.0069	.0650	.0010	64	.0067
NA	.1153	.1346	.0682	.6000	.0050	68	.0902
NI	.0048	.0259	.0013	.2100	.0005	64	.0049
PB	.0108	.0116	.0075	.0630	.0009	64	.0093
P	.0228	.0367	.0101	.2320	.0009	59	.0185
ZN	.0173	.0439	.0075	.3200	.0010	66	.0089

( ) – Values calculated excluding elevated Zn concentrations

FIGURE 1

MONITORING STATIONS IN NANTICOKE REGION

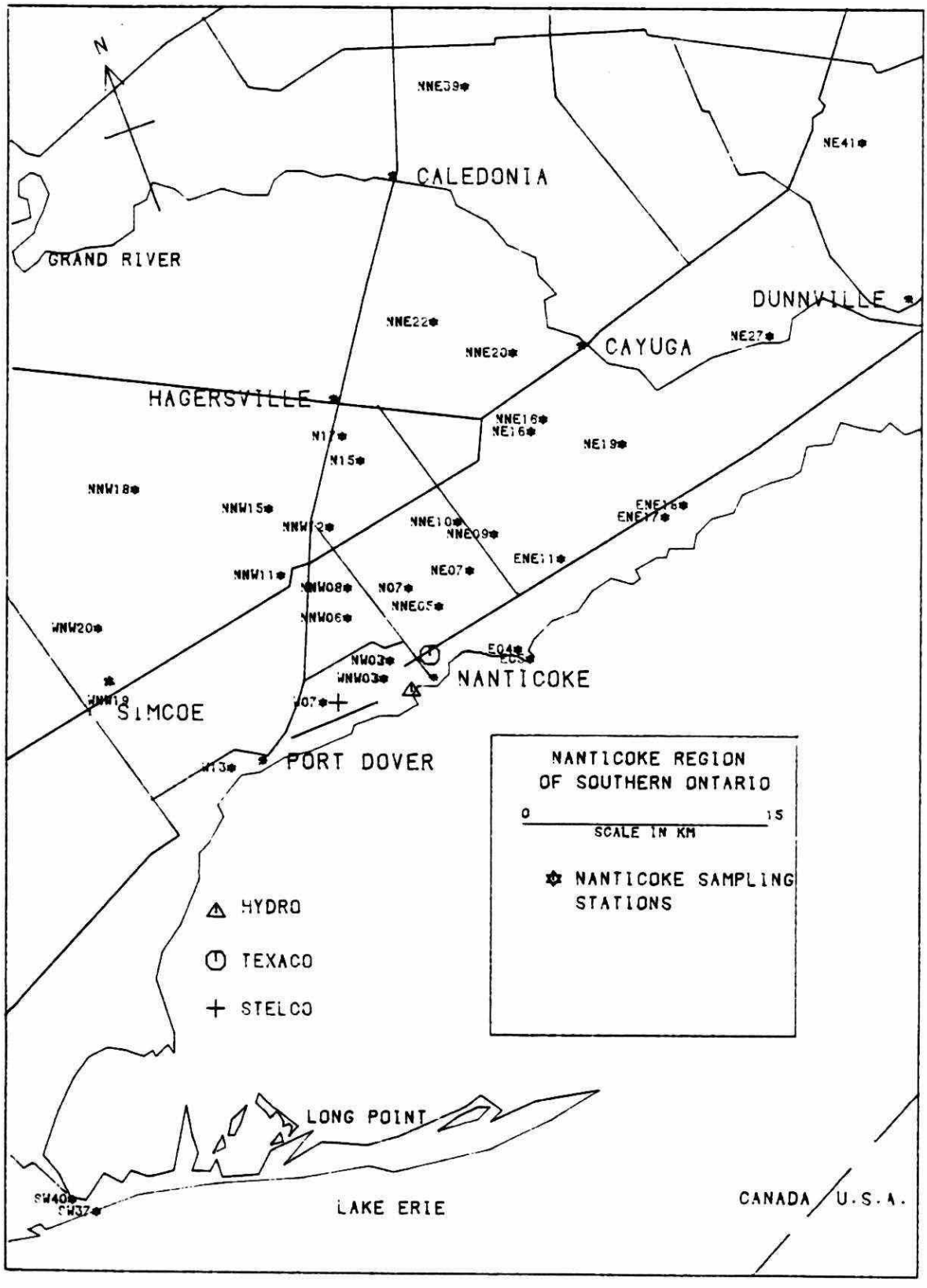


Figure 2

Annual Frequency Distribution of SO_2 for 1980

(All Stations)

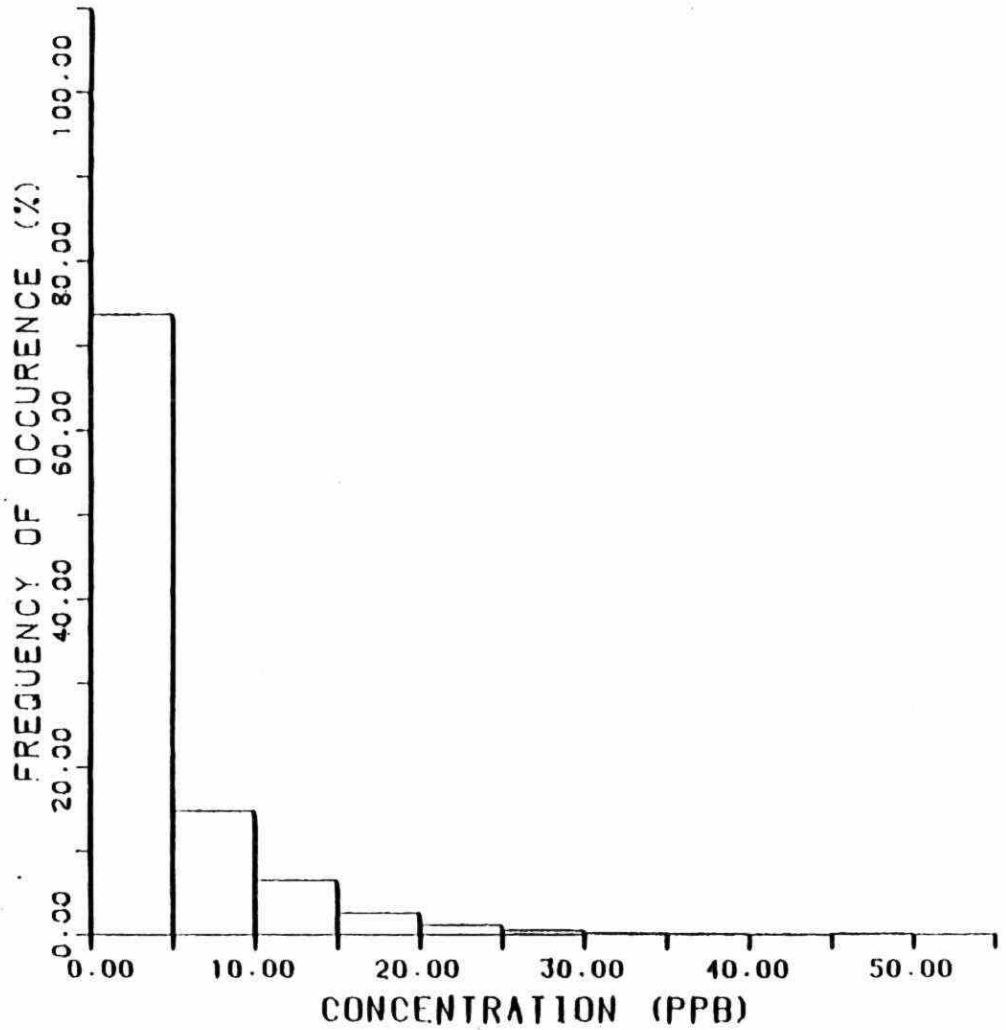
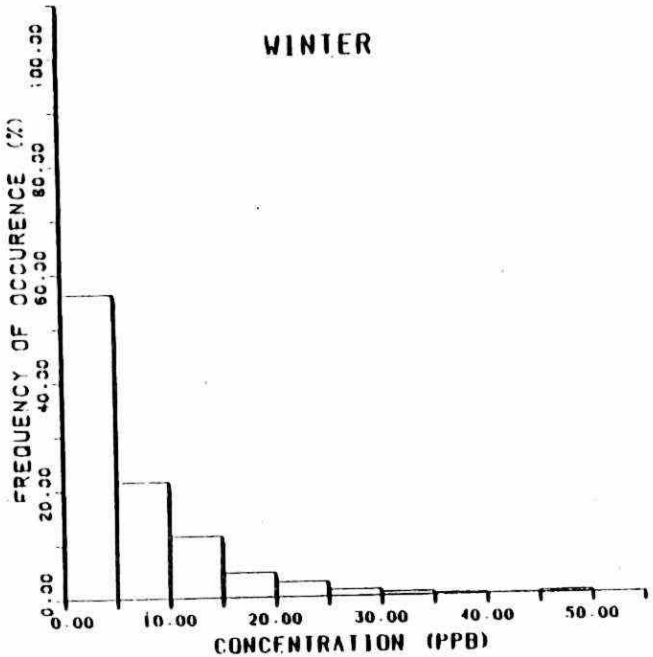
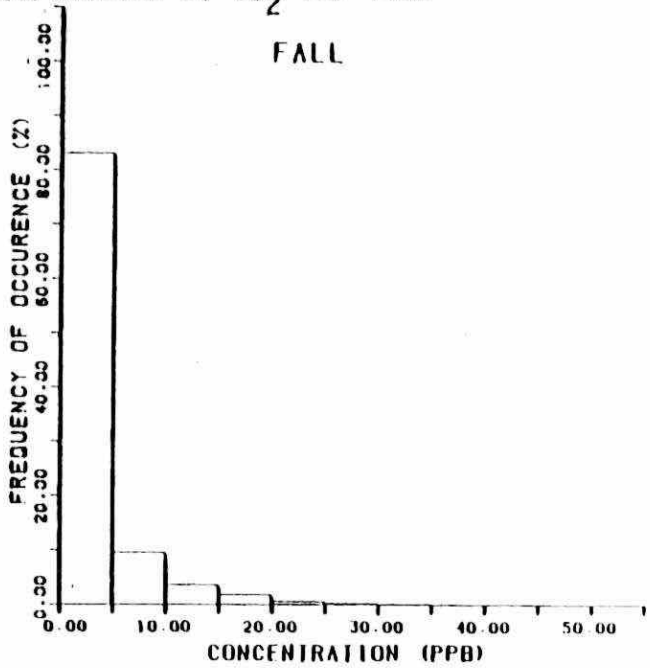
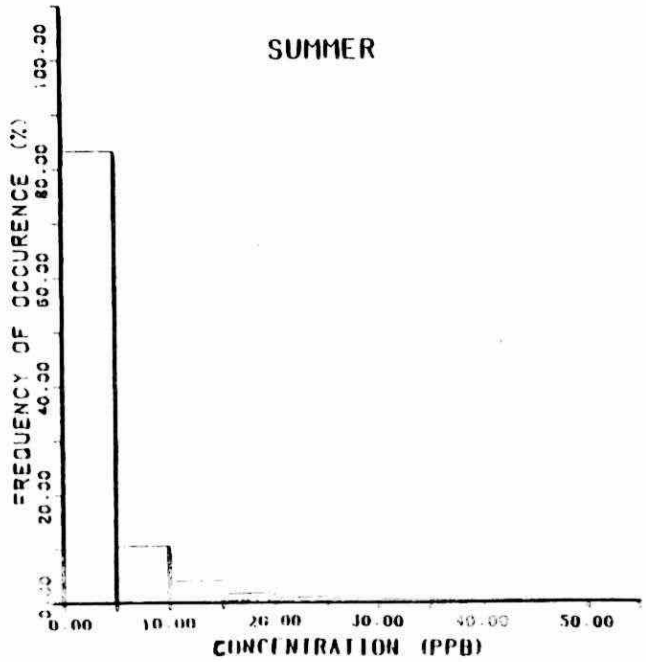


Figure 3

Seasonal Frequency Distribution of SO_2 for 1980







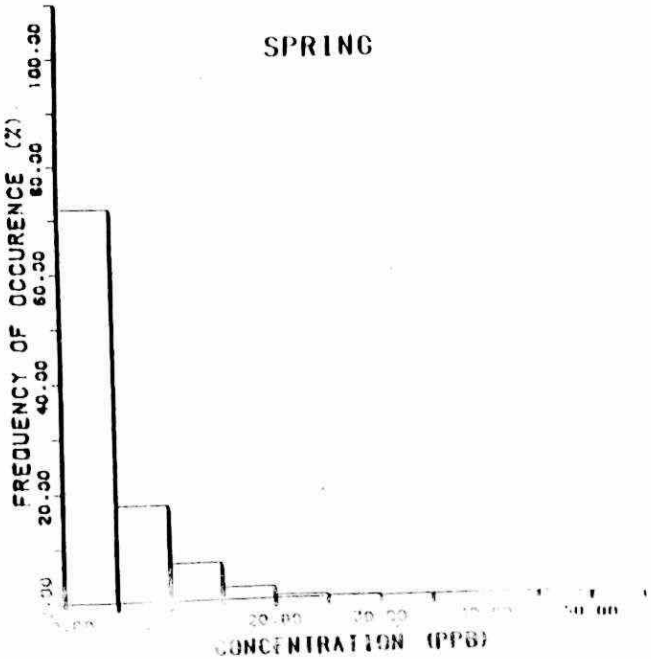


Figure 4

Annual Frequency Distribution of O_3 for 1980

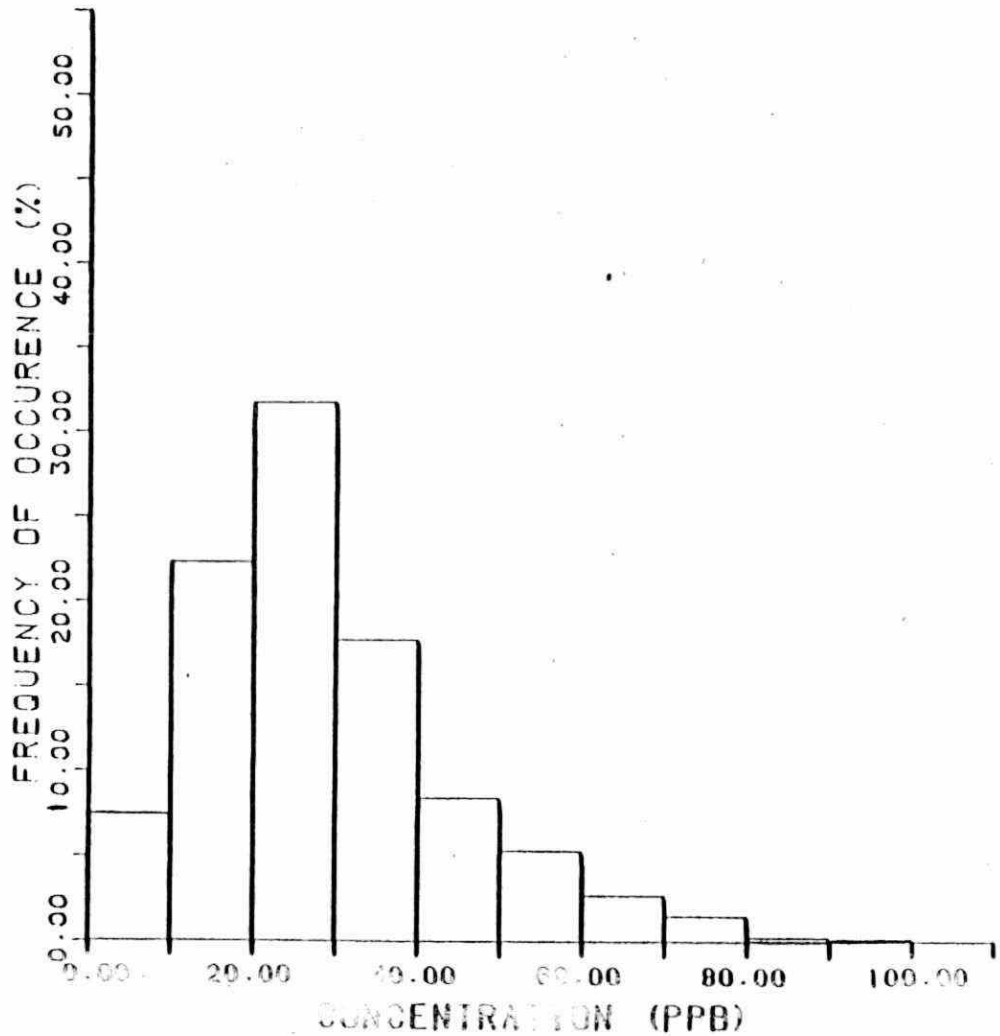


Figure 5
Seasonal Frequency Distribution of O_3 for 1980

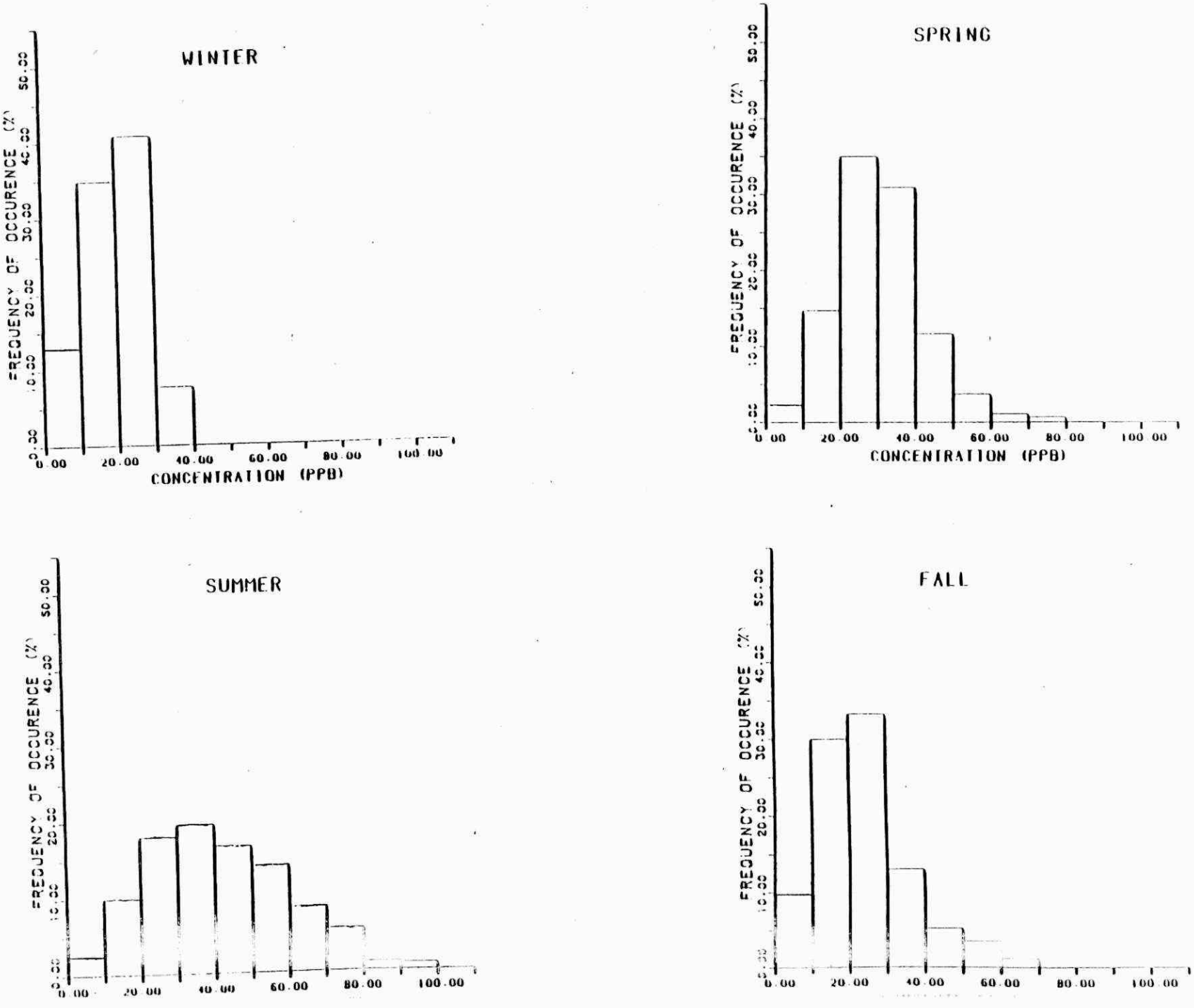


Figure 6

Annual Frequency Distribution of NO_2 for 1980

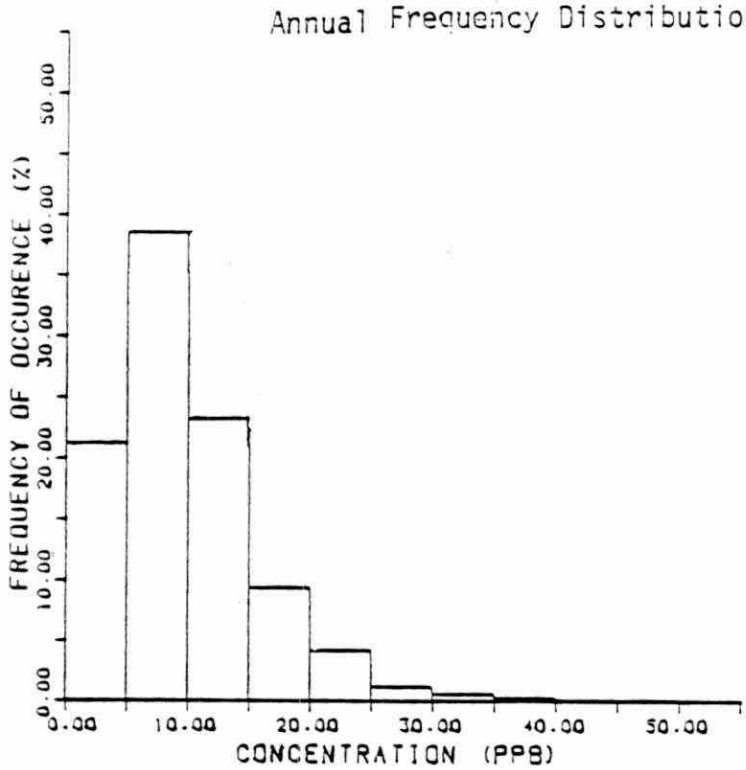


Figure 7

Annual Frequency Distribution of TRS for 1980

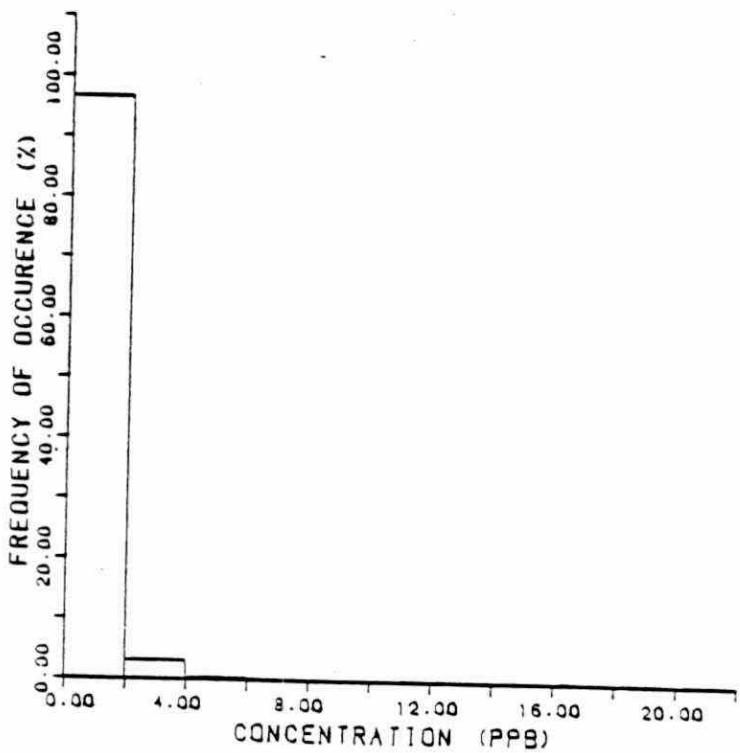


Figure 8

Annual Frequency Distribution of CO for 1980

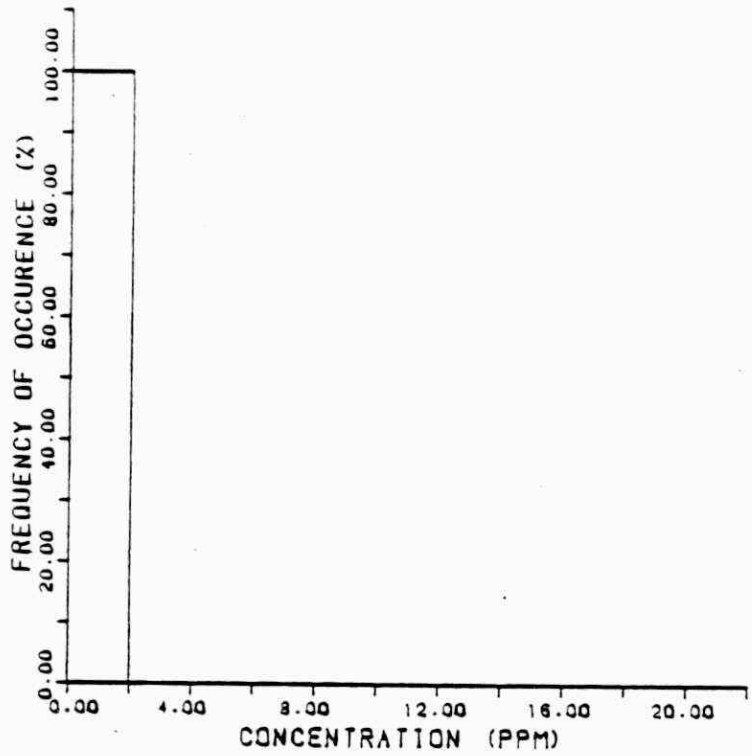
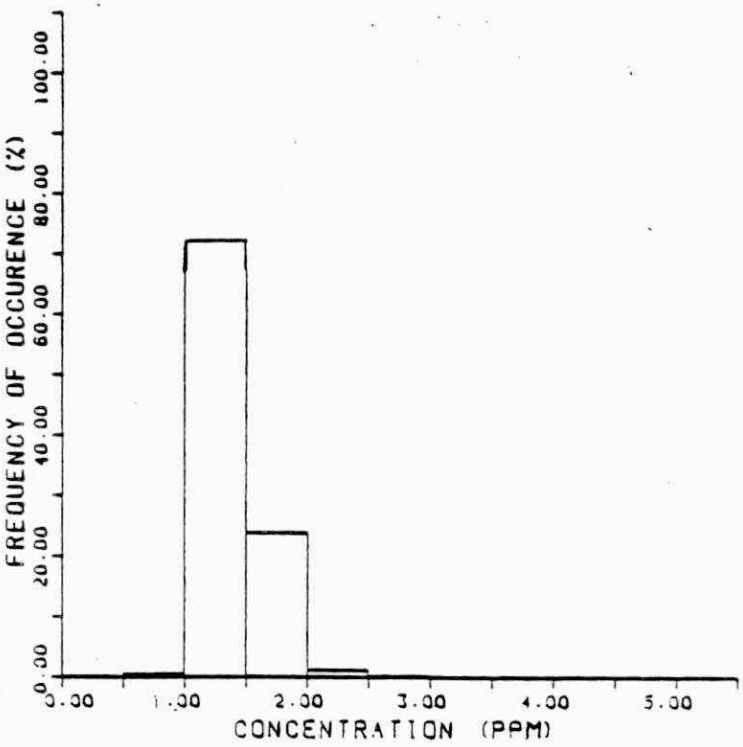


Figure 9

Annual Frequency Distribution of CH_4 for 1980



HI-VOL SAMPLING NETWORK

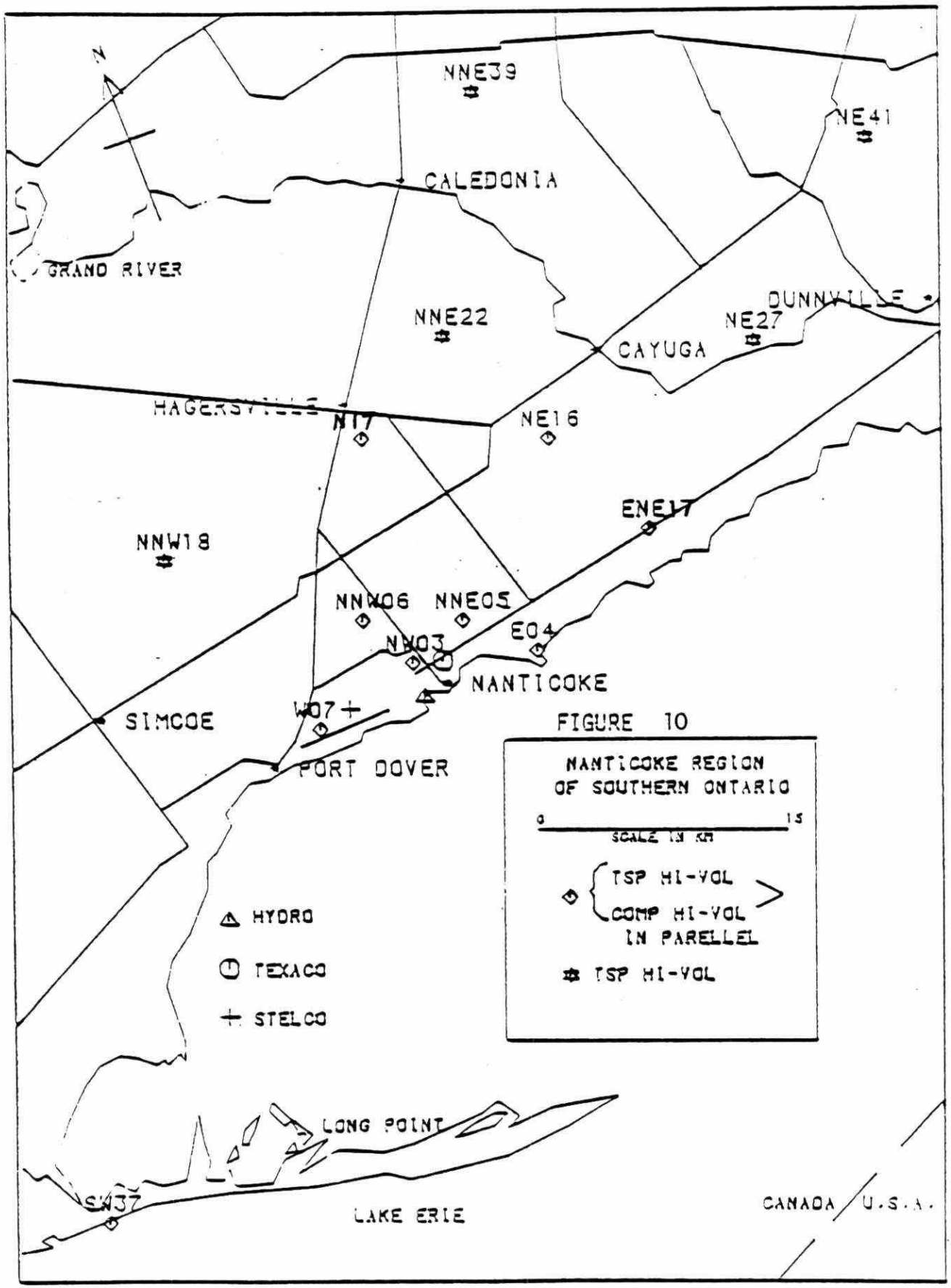


FIGURE 10

Figure 11

Annual Frequency Distribution of Tsp for 1980

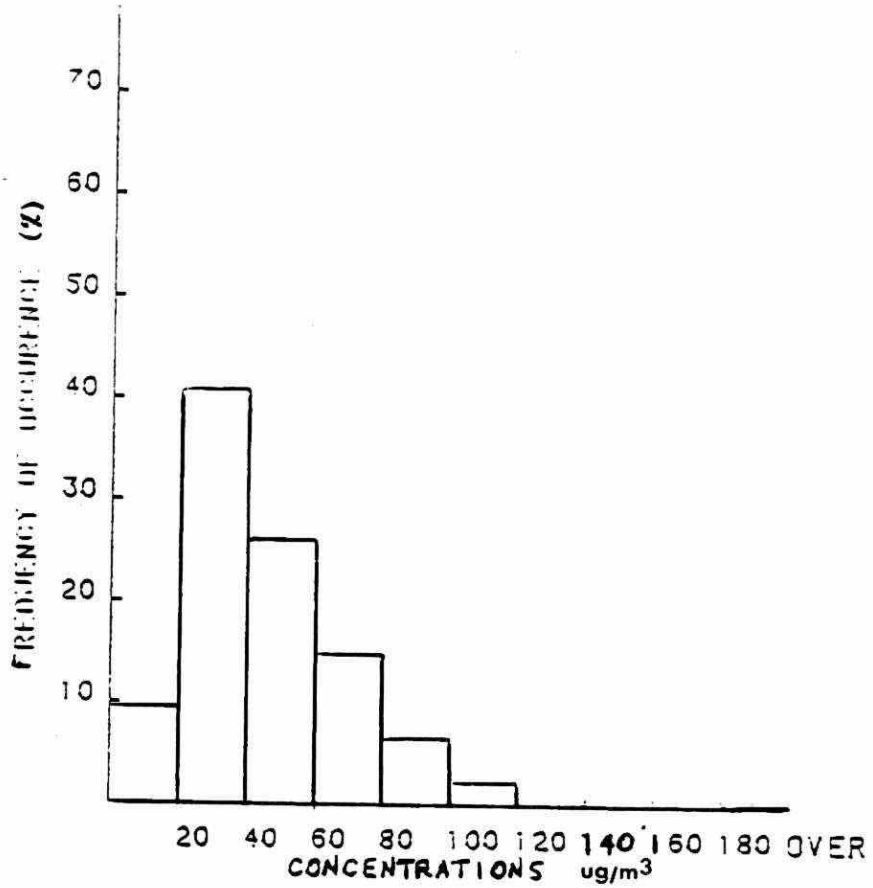
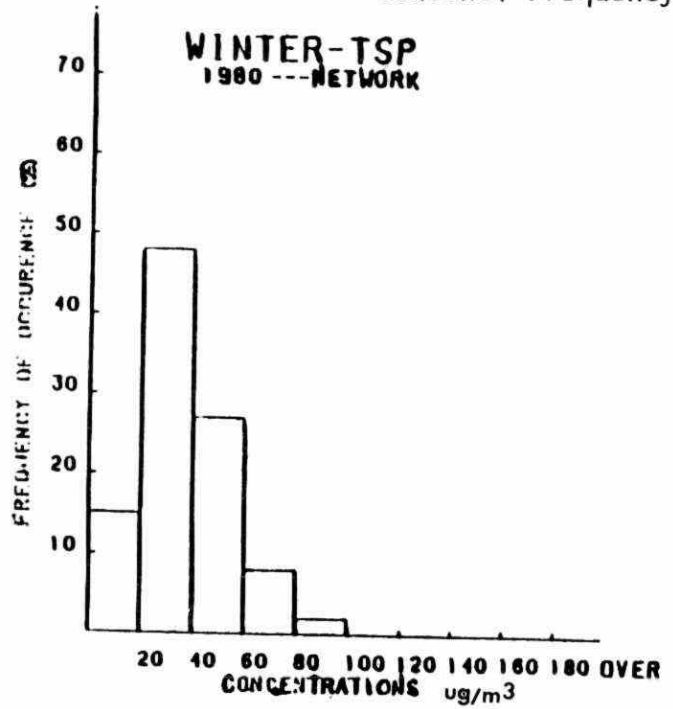
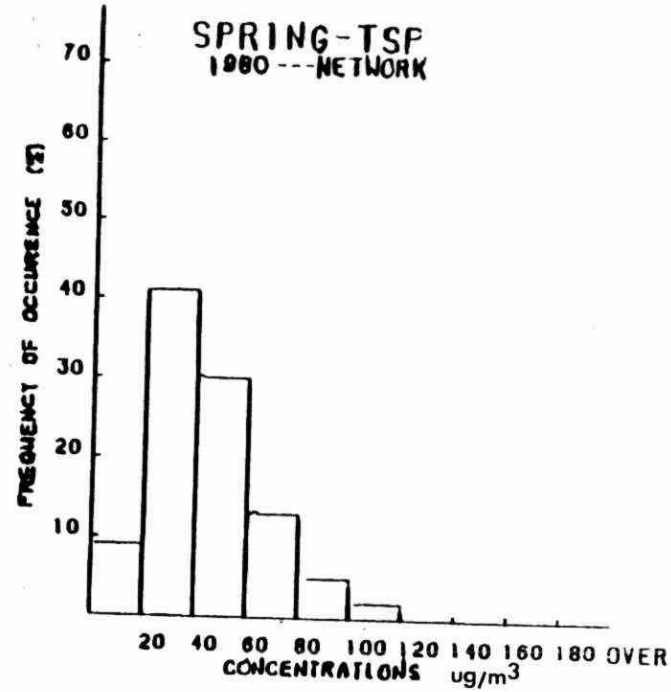
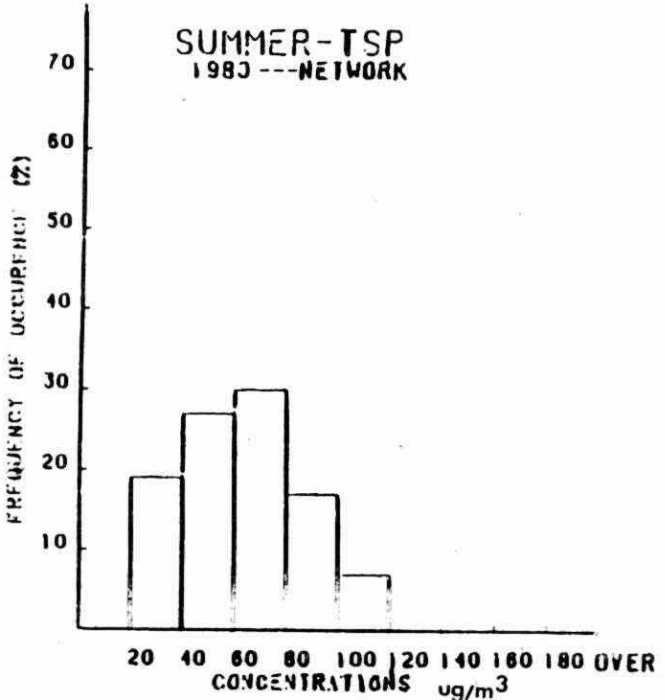


Figure 12
Seasonal Frequency Distribution of Tsp for 1980







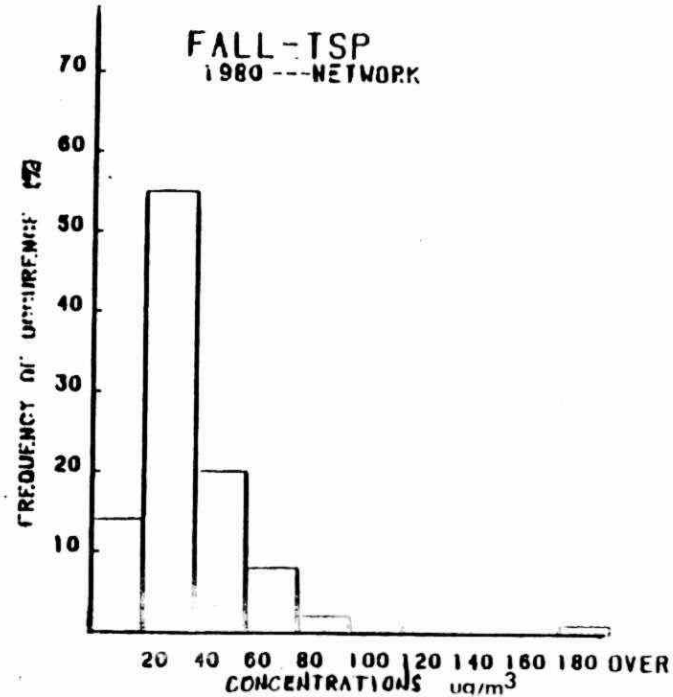


Figure 13

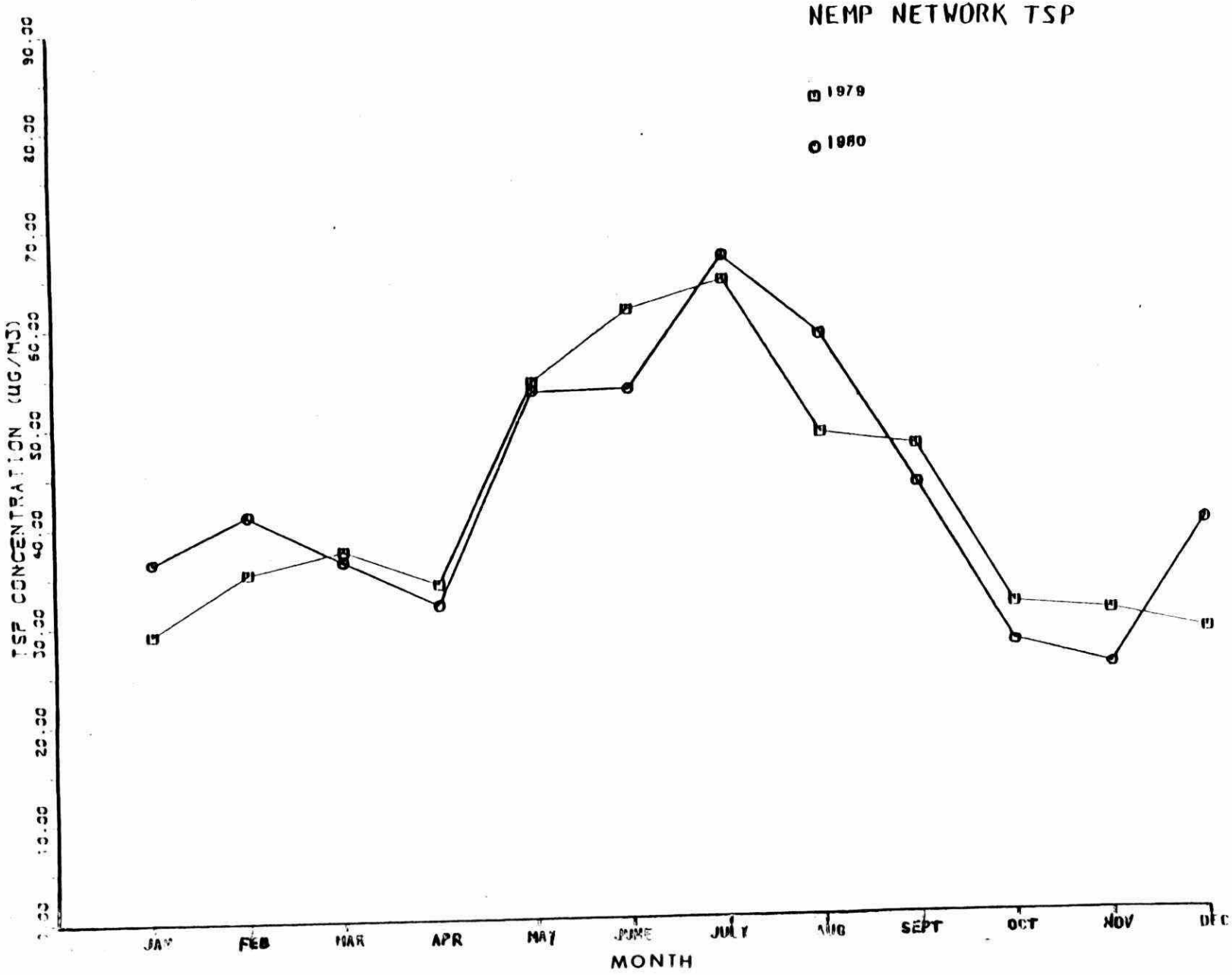
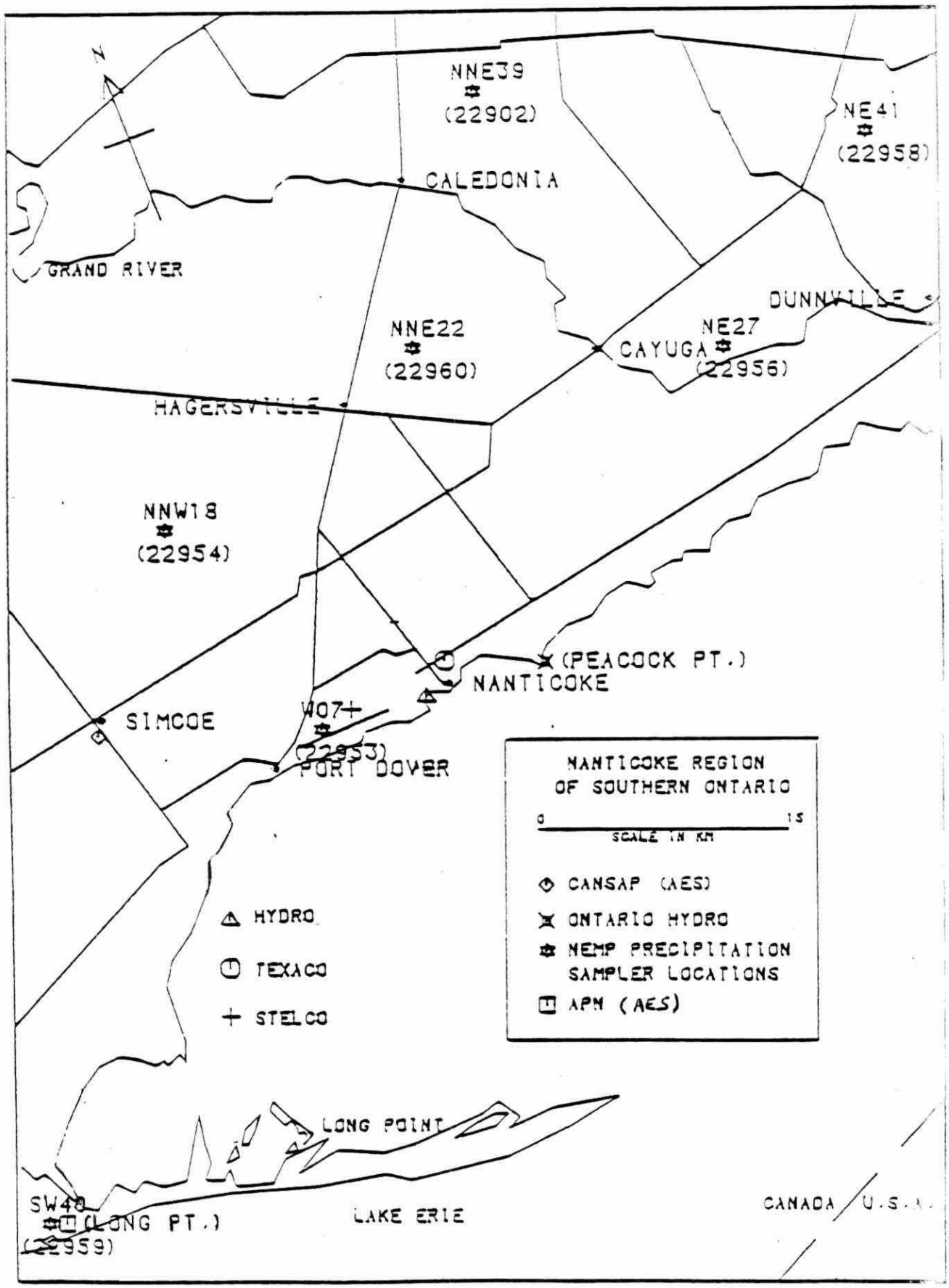

NEMP NETWORK TSP
1979
1980
TSP CONCENTRATION (UG/M3)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC
MONTH

FIGURE 14

PRECIPITATION SAMPLING NETWORK



Appendix 1

NEMP PARTICULATES DATA COLLECTED DURING JANUARY TO DECEMBER 1980.

Sampling dates were chosen according to the daily wind direction. Wind directions were extracted from the monthly climatological summaries at Simcoe, Ontario. They represent the most frequent direction during the 24 hour sampling period. Dashes correspond to invalid or missing data while (NA) represents concentrations reported as below the detection limit. Geometric means were not calculated for elements which reported in excess of 25% of the data below the detection limit. If less than 25 % of the data are below the detection limit then one half the value of the detection limit was used to calculate the geometric mean. All concentrations are expressed in ug/m^3 and are listed station by station.

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22901	80/ 1/ 1	WNW	.130	.205	BDL	BDL	.013	.062	BDL	.007	BDL	.026	.520	N/A	BDL	.033
22901	80/ 1/10	E	.530	.125	BDL	BDL	.020	.236	BDL	.013	.007	.040	1.300	.020	BDL	.046
22901	80/ 2/ 9	NW	.540	1.210	.007	BDL	.020	.426	.265	.014	.007	.041	1.600	.030	BDL	.034
22901	80/ 2/21	ENE	.460	.687	BDL	BDL	.031	.310	.170	.023	.008	.100	1.400	.020	BDL	.116
22901	80/ 3/10	SSW	2.600	1.239	BDL	BDL	.007	.663	.276	.022	BDL	.045	8.500	.130	BDL	.045
22901	80/ 3/28	NE	.710	1.069	BDL	BDL	.007	.532	.219	.028	.007	.050	2.300	.030	.008	.085
22901	80/ 4/ 9	S	.460	.263	BDL	.004	.007	.261	.102	.007	BDL	.015	.770	N/A	BDL	.029
22901	80/ 4/21	NW	2.200	2.210	BDL	BDL	.008	.550	.339	.016	.008	.016	4.000	.900	BDL	.024
22901	80/ 5/ 9	W	5.900	3.313	BDL	BDL	.007	.902	.515	.030	BDL	.030	11.000	.160	BDL	.030
22901	80/ 5/21	NE	10.000	2.075	BDL	BDL	.015	.855	.339	.031	.008	.062	16.000	.140	.008	.054
22901	80/ 6/ 8	NW	.330	.463	BDL	BDL	.007	.162	.112	.007	BDL	BDL	1.500	.020	BDL	BDL
22901	80/ 6/14	SSW	2.500	.763	BDL	.004	.015	.960	.160	.053	.008	.107	4.300	.100	BDL	.153
22901	80/ 7/ 2	NW	1300	2.460	BDL	BDL	.015	.578	.370	.024	BDL	.048	12.500	N/A	.002	.023
22901	80/ 7/ 8	NW	.190	2.030	BDL	BDL	.006	.268	.260	.010	BDL	.022	3.400	N/A	BDL	.021
22901	80/ 8/31	SW	.180	1.440	BDL	BDL	.007	.374	.190	.014	BDL	.043	6.500	N/A	.002	.022
22901	80/ 9/12	NE	.260	2.850	BDL	BDL	.012	.548	.520	.028	BDL	.063	11.000	N/A	.003	.043
22901	80/10/ 6	W	.240	4.660	BDL	BDL	.005	.694	.780	.027	BDL	.027	26.000	N/A	.001	.018
22901	80/10/30	SW	1.330	10.200	BDL	.002	.001	3.950	3.040	.143	.026	.039	3.700	N/A	.007	.039
22901	80/12/17	SW	.370	3.130	BDL	BDL	.010	.795	.550	.031	BDL	.020	14.800	N/A	.003	.043
22901	80/12/29	N	.160	.520	BDL	BDL	.039	.374	.080	.015	BDL	.085	3.600	N/A	.003	.059
ARITH MEAN			1.469	2.046	.007	.003	.013	.675	.415	.027	.010	.044	6.734	.155	.004	.046
STD DEV			2.380	2.216	.000	.001	.009	.791	.632	.029	.006	.027	6.496	.254	.003	.034
GEO MEAN			.623	1.230	.007	.003	.010	.472	.196	.020	.009	.035	4.077	.067	.003	.036
MAXIMUM			10.000	10.200	.007	.004	.039	3.950	3.040	.143	.026	.107	26.000	.900	.008	.153
MINIMUM			.130	.125	.007	.002	.001	.062	.005	.007	.007	.004	.520	.020	.001	.005
# OF SAMPLE			20	20	1	3	20	20	20	20	8	20	20	10	9	20

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22904	80/ 1/ 1	WNW	.260	1.293	N/A	BDL	.016	.142	BDL	.008	BDL	.024	1.700	N/A	BDL	.024
22904	80/ 1/10	E	1.600	.724	N/A	BDL	.015	.426	.164	.015	.007	.052	3.900	.070	BDL	.022
22904	80/ 2/ 9	NW	.890	2.752	N/A	BDL	.034	.520	.870	.023	.006	.069	3.000	.040	BDL	.046
22904	80/ 2/21	ENE	.310	.507	N/A	BDL	.025	.306	.285	.025	.006	.099	1.100	N/A	.007	.087
22904	80/ 4/ 9	S	.320	.176	N/A	BDL	.006	.267	BDL	.011	.006	.017	1.100	.020	BDL	.040
22904	80/ 4/21	NW	2.000	3.203	N/A	.010	.007	.340	.543	.013	.007	.020	21.000	.050	BDL	.020
22904	80/ 5/21	NE	1.600	4.547	N/A	BDL	.012	.592	.956	.023	.006	.088	3.100	.050	.006	.129
22904	80/ 6/ 8	NW	.210	.299	N/A	BDL	BDL	.101	.082	.006	BDL	.006	1.200	.050	BDL	.012
22904	80/ 6/14	SSW	5.200	1.730	N/A	.003	.013	1.385	.304	.052	.006	.130	8.600	N/A	.007	.117
22904	80/ 7/ 8	NW	.180	1.060	BDL	BDL	.004	.330	.220	.014	BDL	.038	3.200	N/A	BDL	.034
22904	80/ 8/31	SW	.180	.500	BDL	BDL	.003	.682	.090	.023	BDL	.064	3.000	N/A	.003	.045
22904	80/ 9/18	S	.080	.530	BDL	BDL	.019	.472	.110	.018	BDL	.079	1.700	N/A	.002	.054
22904	80/10/ 6	W	.070	.560	BDL	BDL	.015	.200	.090	.009	BDL	.050	.900	N/A	BDL	.022
22904	80/10/30	SW	.170	1.090	BDL	.003	BDL	.004	.210	.030	BDL	.052	2.600	N/A	BDL	.051
22904	80/12/17	SW	1.480	2.280	BDL	BDL	.008	2.910	.430	.033	BDL	.046	33.400	N/A	.009	.050
22904	80/12/29	N	.120	.480	BDL	BDL	.028	.652	.060	.026	BDL	.136	2.100	N/A	.005	.067
ARITH MEAN			.917	1.358	N/A	.005	.013	.583	.276	.021	.006	.061	5.725	.047	.006	.051
STD DEV			1.278	1.203	N/A	.003	.009	.676	.281	.011	.000	.037	8.591	.015	.002	.033
GEO MEAN			.413	.932	N/A	.004	.011	.319	.136	.018	.006	.047	3.001	.044	.005	.042
MAXIMUM			5.200	4.547	N/A	.010	.034	2.910	.956	.052	.007	.136	33.400	.070	.009	.129
MINIMUM			.070	.176	N/A	.003	.003	.004	.005	.006	.006	.006	.900	.020	.002	.012
# OF SAMPLE			16	16	0	3	16	16	16	16	7	16	16	6	7	16

BDL - below detection limit
N/A - data not available

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22951	80/ 1/ 1	WNW	.110	.810	BDL	BDL	.017	.093	.078	.003	BDL	.022	.480	N/A	BDL	BDL
22951	80/ 1/10	E	1.200	.783	BDL	BDL	.012	.547	.261	.021	.007	.078	3.300	.060	.003	.041
22951	80/ 2/ 9	NW	1.100	3.179	.004	.013	.009	.519	.940	.020	.005	.092	3.500	.040	BDL	.051
22951	80/ 2/21	ENE	.240	.561	.002	BDL	.014	.629	.167	.041	BDL	.152	1.100	.020	.003	.092
22951	80/ 3/10	SSW	.620	.253	BDL	BDL	.001	.314	.082	.013	BDL	.042	2.300	.040	BDL	.052
22951	80/ 3/28	NE	.720	3.513	.002	BDL	.002	1.267	.431	.045	BDL	.092	2.300	.030	.008	.116
22951	80/ 4/ 9	S	.390	.196	BDL	BDL	.003	.280	.082	.011	BDL	.029	1.100	.020	.002	.032
22951	80/ 4/21	NW	.800	2.828	BDL	BDL	.009	.344	.817	.014	BDL	.010	3.900	.040	BDL	.020
22951	80/ 5/ 9	W	2.000	1.939	BDL	BDL	.003	.503	.445	.015	BDL	.022	5.300	.070	BDL	.022
22951	80/ 5/21	NE	1.600	2.839	BDL	BDL	.008	.646	.795	.028	BDL	.106	4.300	.080	.004	.105
22951	80/ 6/ 8	NW	.210	.201	BDL	BDL	.001	.102	BDL	.003	BDL	BDL	1.200	N/A	BDL	BDL
22951	80/ 6/14	SSW	3.100	1.104	BDL	BDL	.008	.973	.278	.043	BDL	.115	3.700	.090	BDL	.083
22951	80/ 8/31	SW	.170	.430	BDL	BDL	.011	.293	.070	.010	BDL	.072	2.500	N/A	.003	.034
22951	80/ 9/12	NE	.180	1.180	.002	BDL	.006	.454	.330	.020	BDL	.093	4.400	N/A	.002	.053
22951	80/ 9/18	S	.120	.770	BDL	BDL	.005	.530	.120	.019	BDL	.042	1.500	N/A	BDL	.032
22951	80/10/ 6	W	.080	.400	BDL	BDL	.005	.210	.060	.010	BDL	.063	1.300	N/A	BDL	.022
22951	80/10/30	SW	.120	.620	BDL	BDL	.018	.268	.100	.011	BDL	.052	2.500	N/A	BDL	.036
22951	80/12/17	SW	.230	2.160	BDL	.002	.007	.536	.630	.019	BDL	.036	4.400	N/A	.002	.045
22951	80/12/29	N	.130	.300	BDL	BDL	.024	.468	.050	.021	BDL	.132	1.900	N/A	.004	.082
ARITH MEAN			.691	1.267	.002	.007	.009	.472	.302	.019	.006	.066	2.683	.049	.003	.049
STD DEV			.786	1.081	.001	.006	.006	.277	.287	.012	.001	.041	1.363	.023	.002	.032
GEO MEAN			.381	.847	.002	.005	.006	.394	.168	.016	.006	.049	2.279	.043	.003	.037
MAXIMUM			3.100	3.513	.004	.013	.024	1.267	.940	.045	.007	.152	5.300	.090	.008	.116
MINIMUM			.080	.196	.002	.002	.001	.093	.005	.003	.005	.004	.480	.020	.002	.005
# OF SAMPLE			19	19	4	2	19	19	19	19	2	19	19	10	9	19

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22955	80/ 2/ 9	NW	1.600	3.050	N/A	.008	.023	.782	1.007	.031	.008	.084	1.900	.040	N/A	.061
22955	80/ 2/21	ENE	.430	.410	N/A	BDL	.033	.250	.100	.025	.009	.126	1.100	.020	N/A	.084
22955	80/ 3/10	SSW	.680	.371	N/A	BDL	.009	.411	.139	.019	BDL	.019	2.700	.030	N/A	.056
22955	80/ 3/28	NE	1.600	3.799	N/A	BDL	.302	.688	1.583	.029	.016	.115	3.800	.070	N/A	.144
22955	80/ 4/ 9	S	.320	.238	N/A	BDL	.027	.282	.092	.009	BDL	.018	.950	.020	N/A	.037
22955	80/ 5/ 9	W	1.800	1.030	N/A	BDL	.008	.417	.243	.016	.009	.016	2.780	.040	N/A	.024
22955	80/ 6/ 8	NW	.300	.143	N/A	BDL	.010	.185	.114	.010	BDL	.010	1.780	.020	N/A	.010
22955	80/ 6/14	SSW	3.100	1.025	N/A	BDL	.031	1.020	.297	.031	.011	.113	3.000	.100	N/A	.072
22955	80/ 8/31	SW	.140	.330	BDL	BDL	.022	.284	.080	.013	BDL	.062	1.700	N/A	.002	.430
22955	80/ 9/12	NE	.230	2.040	BDL	.002	.074	.450	.670	.020	BDL	.080	4.900	N/A	.002	.500
22955	80/ 9/18	S	.100	1.290	BDL	BDL	.066	.366	.500	.015	BDL	.086	1.900	N/A	BDL	.104
22955	80/10/ 6	W	.080	.140	BDL	BDL	.046	.193	.010	.007	BDL	.060	1.100	N/A	BDL	.032
22955	80/10/30	SW	.100	.530	BDL	BDL	.113	.346	.110	.014	BDL	.057	1.000	N/A	.002	.047
22955	80/12/17	SW	.230	2.510	BDL	.002	.019	1.443	.960	.064	BDL	.080	4.500	N/A	.005	.106
22955	80/12/29	N	.190	.340	.003	BDL	.099	.676	.060	.026	BDL	.247	2.500	N/A	.005	.081
ARITH MEAN			.727	1.150	.003	.004	.059	.520	.398	.022	.011	.078	2.374	.042	.003	.119
STD DEV			.859	1.127	.000	.003	.072	.338	.446	.014	.003	.058	1.212	.027	.001	.140
GEO MEAN			.378	.686	.003	.003	.035	.435	.198	.019	.010	.057	2.081	.036	.003	.072
MAXIMUM			3.100	3.799	.003	.008	.302	1.443	1.583	.064	.016	.247	4.900	.100	.005	.500
MINIMUM			.080	.140	.003	.002	.008	.185	.010	.007	.008	.010	.950	.020	.002	.010
# OF SAMPLE			15	15	1	3	15	15	15	15	5	15	15	8	5	15

BDL - below detection limit
N/A - data not available

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22953	80/ 1/ 1	WNW	.180	1.687	N/A	BDL	.030	.122	.104	.007	BDL	.015	.950	.010	BDL	.015
22953	80/ 1/10	E	1.100	1.034	N/A	BDL	.039	.366	.087	.016	.009	.024	3.500	.050	BDL	.039
22953	80/ 2/ 9	NW	.780	3.294	N/A	BDL	.025	.386	.760	.016	.009	.049	.820	.030	BDL	.033
22953	80/ 2/21	ENE	.200	.795	N/A	BDL	.027	.243	.090	.018	.010	.072	.960	.020	BDL	.072
22953	80/ 3/28	NE	.590	1.391	N/A	BDL	.018	.700	.259	.027	.010	.036	2.700	.040	.009	.089
22953	80/ 4/ 9	S	.350	.156	N/A	BDL	.052	.044	BDL	.009	BDL	.009	.930	.020	BDL	.043
22953	80/ 4/21	NW	.920	2.280	N/A	BDL	.027	.313	.394	.018	BDL	.009	2.300	.030	BDL	.009
22953	80/ 5/ 9	W	.800	2.318	N/A	BDL	.034	.365	.335	.017	BDL	.009	2.500	.040	BDL	.009
22953	80/ 5/21	NE	2.100	2.024	N/A	BDL	.036	.543	.357	.027	.010	.080	2.400	.050	.009	.071
22953	80/ 6/ 8	NW	.160	.409	N/A	BDL	.033	.091	BDL	.008	BDL	.016	.850	N/A	BDL	.008
22953	80/ 6/14	SSW	2.500	1.330	N/A	.009	.078	1.108	.273	.052	.010	.122	4.100	.090	BDL	.004
22953	80/ 7/ 2	NW	N/A	1.420	BDL	.003	.109	.492	.270	.021	BDL	.050	2.600	N/A	.002	.340
22953	80/ 7/ 8	NW	N/A	.900	BDL	.002	.064	.273	.160	.011	BDL	.046	.900	N/A	BDL	.370
22953	80/ 8/31	SW	N/A	.390	BDL	.002	.166	.291	.090	.012	BDL	.057	3.100	N/A	.002	.430
22953	80/ 9/12	NE	N/A	1.720	BDL	.003	.307	.522	.420	.021	BDL	.094	2.300	N/A	.002	.054
22953	80/ 9/18	S	N/A	.500	BDL	.002	.623	.432	.070	.016	BDL	.055	1.200	N/A	BDL	.040
22953	80/10/30	SW	.120	.560	BDL	BDL	.052	.290	.060	.011	BDL	.052	2.100	N/A	.002	.037
22953	80/12/17	SW	.220	.910	BDL	BDL	.008	.380	.180	.016	BDL	.037	2.600	N/A	.002	.050
22953	80/12/29	N	.230	1.040	BDL	.002	.019	.613	.290	.022	BDL	.102	3.300	N/A	.004	.072
ARITH MEAN			.732	1.271	N/A	.003	.092	.399	.222	.018	.010	.049	2.111	.038	.004	.094
STD DEV			.714	.783	N/A	.002	.142	.236	.180	.010	.000	.032	1.001	.021	.003	.127
GEO MEAN			.468	1.014	N/A	.003	.049	.323	.132	.016	.010	.037	1.846	.032	.003	.044
MAXIMUM			2.500	3.294	N/A	.009	.623	1.108	.760	.052	.010	.122	4.100	.090	.009	.430
MINIMUM			.120	.156	N/A	.002	.008	.044	.005	.007	.009	.009	.820	.010	.002	.004
# OF SAMPLE			14	19	0	7	19	19	19	19	6	19	19	10	8	19

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22952	80/ 1/ 1	WNW	.480	.935	BDL	N/A	.075	.143	.068	.004	N/A	.010	.710	N/A	BDL	.018
22952	80/ 2/ 9	NW	.110	2.391	.003	N/A	.145	.572	.731	.022	N/A	.067	1.500	.030	BDL	.046
22952	80/ 2/21	ENE	.160	.307	BDL	N/A	.200	.198	.067	.015	N/A	.097	.410	N/A	BDL	.065
22952	80/ 3/10	SSW	.760	.272	BDL	N/A	.056	.326	.075	.015	N/A	.029	1.400	.030	BDL	.056
22952	80/ 3/28	NE	.610	.643	.001	N/A	.051	.621	.253	.014	N/A	.047	1.600	.030	.004	.056
22952	80/ 4/ 9	S	.370	.133	BDL	N/A	.039	.234	BDL	.009	N/A	.008	.730	N/A	BDL	.029
22952	80/ 4/21	NW	.320	.943	BDL	N/A	.038	.180	.256	.007	N/A	.009	1.500	N/A	BDL	.012
22952	80/ 5/ 9	W	.630	.880	BDL	N/A	.029	.261	.240	.009	N/A	BDL	1.900	.030	BDL	.007
22952	80/ 5/21	NE	1.100	.848	BDL	N/A	.078	.405	.231	.020	N/A	.055	1.800	.030	.005	.036
22952	80/ 6/ 8	NW	.370	.146	BDL	N/A	.029	.103	BDL	.003	N/A	BDL	1.200	N/A	BDL	BDL
22952	80/ 6/14	SSW	2.200	.679	BDL	N/A	.090	.901	.166	.043	N/A	.092	3.400	.080	.003	.071
22952	80/ 7/ 2	NW	.220	3.490	BDL	BDL	.155	.419	.480	.018	BDL	.060	5.400	N/A	.003	.026
22952	80/ 7/ 8	NW	.250	.580	BDL	BDL	.060	.421	.110	.015	BDL	.045	3.600	N/A	BDL	.044
22952	80/ 9/12	NE	.190	1.090	BDL	BDL	.088	.502	.310	.020	BDL	.079	5.300	N/A	.003	.048
22952	80/ 9/18	S	.030	.320	BDL	BDL	.074	.221	.050	.012	BDL	.032	.650	N/A	BDL	.043
22952	80/10/ 6	W	.090	.630	BDL	BDL	.066	.334	.100	BDL	BDL	.048	1.100	N/A	BDL	.035
22952	80/10/30	SW	.100	.370	BDL	BDL	.043	.374	.060	.017	BDL	.061	1.400	N/A	.002	.048
22952	80/12/17	SW	.120	.540	BDL	BDL	.071	.563	.140	.022	BDL	.038	1.500	N/A	.002	.057
22952	80/12/29	N	.150	.220	BDL	BDL	.250	.922	.030	.033	BDL	.176	1.300	N/A	.006	.092
ARITH MEAN			.435	.811	.002	N/A	.086	.405	.178	.016	N/A	.051	1.916	.038	.003	.042
STD DEV			.495	.802	.001	N/A	.058	.226	.177	.010	N/A	.041	1.416	.019	.001	.022
GEO MEAN			.268	.568	.002	N/A	.071	.346	.099	.012	N/A	.032	1.524	.035	.003	.034
MAXIMUM			2.200	3.490	.003	N/A	.250	.922	.731	.043	N/A	.176	5.400	.080	.006	.092
MINIMUM			.030	.133	.001	N/A	.029	.103	.005	.000	N/A	.004	.410	.030	.002	.005
# OF SAMPLE			19	19	2	0	19	19	19	19	0	19	19	6	8	19

BDL - below detection limit
N/A - data not available

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22957	80/ 1/ 1	WNW	.240	1.583	.014	.024	.040	.139	.095	.010	.032	.170	1.000	N/A	.026	.062
22957	80/ 1/10	E	.690	.849	.016	.027	.053	.451	.255	.021	.041	.235	12.000	.040	.030	.046
22957	80/ 2/ 9	NW	1.500	3.258	.020	.031	.110	.841	1.175	.039	.048	.249	10.000	.050	.032	.279
22957	80/ 2/21	ENE	.410	4.650	.160	.027	.062	.312	.139	.029	.036	.240	3.200	N/A	.030	.076
22957	80/ 3/10	SSW	.780	.533	.016	.028	.041	.318	.183	.024	.038	.206	1.700	.040	.031	.082
22957	80/ 3/28	NE	1.700	3.031	.021	.033	.039	.488	1.073	.025	.044	.260	3.600	.070	.038	.128
22957	80/ 4/ 9	S	.350	.219	.016	.028	.032	.253	.051	.015	.036	.191	1.400	.020	.030	.028
22957	80/ 4/21	NW	1.100	3.812	.016	.028	.035	.497	1.315	.030	.038	.198	3.600	.050	.030	.032
22957	80/ 5/ 9	W	2.200	3.855	.017	.030	.034	.532	1.241	.025	.039	.204	6.100	.090	.033	.009
22957	80/ 5/21	NE	N/A	2.480	.017	.029	.037	.503	.816	.029	.040	.251	N/A	N/A	.034	.051
22957	80/ 6/ 8	NW	.240	.310	.016	.029	.034	.145	.089	.010	.037	.179	1.400	.010	.030	.014
22957	80/ 6/14	SSW	2.800	3.212	.019	.032	.045	.872	.907	.045	.045	.274	5.100	.110	.034	.077
22957	80/ 7/ 8	NW	N/A	BDL	BDL	.002	.010	.331	BDL	.013	BDL	.054	1.050	N/A	BDL	.040
22957	80/ 8/31	SW	N/A	1.200	BDL	.002	.003	.356	.400	.012	BDL	.077	BDL	N/A	.002	.035
22957	80/ 9/12	NE	.220	1.840	BDL	BDL	.004	.483	.660	.021	BDL	.116	3.970	N/A	.003	.068
22957	80/ 9/18	S	.110	.950	BDL	.004	.101	.432	.330	.023	BDL	.073	2.000	N/A	BDL	.090
22957	80/10/ 6	W	.060	.640	BDL	BDL	.007	.165	.190	.007	BDL	.084	.800	N/A	BDL	.024
22957	80/10/30	SW	.140	1.260	BDL	BDL	.032	.363	.340	.015	BDL	.048	1.200	N/A	BDL	.040
22957	80/12/17	SW	.480	3.820	BDL	.002	.035	1.440	1.600	.048	BDL	.051	9.600	N/A	.005	.081
22957	80/12/29	N	.160	.430	BDL	BDL	.069	.528	.090	.023	BDL	.177	1.000	N/A	.005	.080
ARITH MEAN			.775	1.897	.029	.018	.041	.472	.548	.023	.039	.167	3.617	.053	.020	.067
STD DEV			.791	1.439	.040	.013	.027	.291	.493	.011	.004	.076	3.393	.030	.014	.057
GEO MEAN			.448	1.127	.020	.011	.030	.402	.290	.021	.039	.144	1.783	.043	.011	.051
MAXIMUM			2.800	4.650	.160	.033	.110	1.440	1.600	.048	.048	.274	12.000	.110	.038	.279
MINIMUM			.060	.015	.014	.002	.003	.139	.005	.007	.032	.048	.002	.010	.002	.009
# OF SAMPLE			17	20	12	20	20	20	20	20	12	20	19	9	20	20

1980 NEMP PARTICULATE TRACE METAL DATA (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	TI	V	ZN
22961	80/ 1/ 1	WNW	.200	1.433	.019	.032	.048	.129	.076	.011	.040	.218	.500	N/A	.034	.010
22961	80/ 1/10	E	1.000	.908	.017	.030	.044	.381	.158	.021	.041	.236	2.700	.050	.033	.035
22961	80/ 2/ 9	NW	.580	2.667	.019	.029	.056	.441	.702	.024	.040	.239	2.600	.040	.032	.039
22961	80/ 2/21	ENE	.270	.668	.021	.035	.065	.266	.125	.025	.046	.302	.750	.010	.038	.065
22961	80/ 3/28	NE	.570	1.274	.022	.035	.055	.417	.361	.025	.048	.264	3.500	.040	.040	.061
22961	80/ 4/ 9	S	.370	.316	.020	.035	.045	.365	.072	.020	.047	.236	1.300	.020	.038	.028
22961	80/ 5/ 9	W	2.000	3.626	.019	.031	.067	.535	.444	.031	.045	.214	4.200	.060	.036	.028
22961	80/ 5/21	NE	2.000	7.553	.020	.035	.045	.767	.740	.041	.049	.300	3.800	.070	.041	.096
22961	80/ 6/ 8	NW	.360	.343	.019	.033	.044	.149	.062	.013	.043	.214	.640	.020	.036	.040
22961	80/ 6/ 8	NW	.420	.849	.021	.035	.046	.285	.117	.019	.046	.232	2.600	.020	.037	.023
22961	80/ 6/14	SSW	3.200	3.479	.020	.036	.065	1.418	.339	.077	.049	.304	4.900	.110	.040	.125
22961	80/ 7/ 2	NW	N/A	3.890	BDL	.003	.027	.911	.460	.041	BDL	.087	1.800	N/A	.004	.095
22961	80/ 7/ 8	NW	N/A	1.410	BDL	.002	.016	.637	.240	.026	BDL	.057	.600	N/A	.002	.066
22961	80/ 8/31	SW	N/A	N/A	BDL	.002	.008	.831	N/A	.023	BDL	.061	N/A	N/A	.002	.069
22961	80/ 9/12	NE	N/A	N/A	BDL	.003	.016	.682	N/A	.027	BDL	.110	N/A	N/A	.002	.059
22961	80/ 9/18	S	N/A	N/A	BDL	.004	.022	.556	N/A	.018	BDL	.092	N/A	N/A	BDL	.053
22961	80/10/ 6	W	.100	1.320	BDL	.002	.178	.523	.190	.025	BDL	.097	1.100	N/A	BDL	.543
22961	80/10/30	SW	.210	2.260	BDL	.002	.023	.912	.370	.056	BDL	.084	2.000	N/A	.003	.084
22961	80/12/17	SW	.230	4.160	BDL	BDL	.006	1.989	.600	.084	BDL	.061	3.900	N/A	.004	.096
22961	80/12/29	N	.140	.510	BDL	BDL	.037	.758	.060	.032	BDL	.143	1.800	N/A	.005	.083
ARITH MEAN			.777	2.157	.020	.020	.046	.648	.301	.032	.045	.178	2.276	.044	.021	.085
STD DEV			.877	1.843	.001	.015	.035	.428	.219	.019	.003	.087	1.356	.029	.017	.109
GEO MEAN			.460	1.492	.020	.011	.035	.528	.219	.028	.045	.153	1.818	.035	.011	.059
MAXIMUM			3.200	7.553	.022	.036	.178	1.989	.740	.084	.049	.304	4.900	.110	.041	.543
MINIMUM			.100	.316	.017	.002	.006	.129	.060	.011	.040	.057	.500	.010	.002	.010
# OF SAMPLE			15	17	11	20	20	20	17	20	11	20	17	10	20	20

BDL - below detection limit
N/A - data not available

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22901	80/ 1/ 1	WNW	.0020	BDL	1.8990	2.8000	BDL	4.7000
22901	80/ 1/10	E	BDL	BDL	N/A	1.4000	BDL	4.6000
22901	80/ 2/ 9	NW	.0040	.0020	1.2100	2.3000	BDL	4.8000
22901	80/ 2/21	ENE	.0020	BDL	4.6860	4.8000	BDL	11.9000
22901	80/ 3/10	SSW	.0030	BDL	2.5600	5.1000	BDL	7.7000
22901	80/ 3/28	NE	.0010	.0010	2.0070	4.8000	BDL	6.2000
22901	80/ 4/ 9	S	BDL	BDL	1.4800	2.1000	BDL	4.0000
22901	80/ 4/21	NW	BDL	BDL	.9910	1.7000	BDL	3.6000
22901	80/ 5/ 9	W	.0050	BDL	.6040	2.6000	BDL	2.9000
22901	80/ 5/21	NE	BDL	BDL	3.4360	5.4000	BDL	10.9000
22901	80/ 6/ 8	NW	BDL	BDL	.3020	.6000	BDL	1.4000
22901	80/ 6/14	SSW	.0030	BDL	6.4890	5.6000	BDL	18.8000
22901	80/ 7/ 2	NW	BDL	.0020	1.8000	3.6000	BDL	6.6000
22901	80/ 7/ 8	NW	BDL	.0020	1.7000	1.8000	BDL	6.2000
22901	80/ 8/31	SW	BDL	.0010	3.0000	3.8000	BDL	13.1000
22901	80/ 9/12	NE	.1700	.0030	0.6000	3.6000	BDL	2.6000
22901	80/ 9/18	S	N/A	N/A	N/A	N/A	N/A	N/A
22901	80/10/ 6	W	BDL	0.0030	0.9000	2.8000	BDL	3.5000
22901	80/10/30	SW	BDL	0.0040	0.4000	4.4000	BDL	2.8000
22901	80/12/17	SW	.1700	0.0040	0.4000	2.6000	BDL	3.3000
22901	80/12/29	N	.0500	2.5000	2.9000	9.0000	BDL	9.0000
ARITH MEAN			.0410	.2522	1.9665	3.5400	N/A	6.4000
STD DEV			.0660	.7493	1.5679	1.8715	N/A	4.2732
GEO MEAN			.0080	.0044	1.4177	3.0405	N/A	5.2459
MAXIMUM			.1700	2.5000	6.4890	9.0000	N/A	18.8000
MINIMUM			.0010	.0010	.3020	.6000	N/A	1.4000
# OF SAMPLE			10	10	19	20	0	20

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22904	80/ 1/ 1	WNW	.0100	.0010	2.2900	4.5000	BDL	9.9000
22904	80/ 1/10	E	.0090	.0010	.9370	3.7000	BDL	4.4000
22904	80/ 2/ 9	NW	.0090	BDL	1.9000	3.3000	BDL	6.0000
22904	80/ 2/21	ENE	BDL	.0060	5.0110	6.3000	BDL	13.9000
22904	80/ 3/10	SSW	N/A	N/A	N/A	N/A	N/A	N/A
22904	80/ 3/22	NE	N/A	N/A	N/A	N/A	N/A	N/A
22904	80/ 4/ 9	S	BDL	.0100	1.7930	1.9000	BDL	4.8000
22904	80/ 4/21	NW	.0100	.0010	.8560	2.1000	BDL	2.8000
22904	80/ 5/21	NE	.0050	.0010	2.6140	6.7000	3DL	8.1000
22904	80/ 6/ 8	NW	.0010	BDL	.1660	1.0000	BDL	1.6000
22904	80/ 6/14	SSW	.0020	BDL	5.2480	6.1000	BDL	14.9000
22904	80/ 7/ 2	NW	N/A	N/A	N/A	N/A	N/A	N/A
22904	80/ 7/ 8	NW	BDL	.0020	2.4000	2.4000	BDL	9.4000
22904	80/ 8/31	SW	BDL	.0020	4.0000	2.4000	BDL	16.2000
22904	80/ 9/12	NE	N/A	N/A	N/A	N/A	N/A	N/A
22904	80/ 9/18	S	.0300	.0040	0.7000	1.4000	BDL	3.1000
22904	80/10/ 6	W	BDL	.0020	1.1000	2.0000	BDL	4.1000
22904	80/10/30	SW	.1300	.0030	1.2000	3.9000	BDL	3.0000
22904	80/12/17	SW	.2600	.0150	0.5000	2.4000	BDL	3.8000
22904	80/12/29	N	.1900	.0040	3.4000	5.6000	BDL	10.5000
ARITH MEAN			.0596	.0042	2.1322	3.4812	N/A	7.2812
STD DEV			.0867	.0036	1.5240	1.7949	N/A	4.5434
GEO MEAN			.0158	.0030	1.5471	3.0194	N/A	5.9048
MAXIMUM			.2600	.0150	5.2480	6.7000	N/A	16.2000
MINIMUM			.0010	.0010	.1660	1.0000	N/A	1.6000
# OF SAMPLE			11	16	16	16	0	16

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22951	80/ 1/ 1	WNW	BDL	BDL	2.4400	3.1000	BDL	6.5000
22951	80/ 1/10	E	.0100	.0020	1.6410	4.5000	BDL	4.8000
22951	80/ 2/ 9	NW	.0060	.0030	1.4890	3.3000	BDL	6.4000
22951	80/ 2/21	ENE	.0030	BDL	6.7820	10.8000	BDL	14.5000
22951	80/ 3/10	SSW	.0010	BDL	3.3100	5.3000	BDL	7.4000
22951	80/ 3/28	NE	BDL	BDL	2.7820	5.9000	BDL	5.2000
22951	80/ 4/ 9	S	BDL	BDL	2.1510	3.0000	BDL	5.5000
22951	80/ 4/21	NW	BDL	.0030	.6820	1.4000	BDL	2.3000
22951	80/ 5/ 9	W	.0010	BDL	1.1000	1.9000	BDL	3.1000
22951	80/ 5/21	NE	.0050	.0010	3.0860	7.2000	BDL	8.5000
22951	80/ 6/ 8	NW	BDL	BDL	.2030	.4000	BDL	1.7000
22951	80/ 6/14	SSW	.0020	BDL	8.0950	10.2000	BDL	20.2000
22951	80/ 7/ 2	NW	N/A	N/A	N/A	N/A	N/A	N/A
22951	80/ 7/ 8	NW	N/A	N/A	N/A	N/A	N/A	N/A
22951	80/ 8/31	SW	BDL	.0020	4.0000	3.3000	BDL	16.4000
22951	80/ 9/12	NE	BDL	.0020	.5000	2.4000	BDL	2.6000
22951	80/ 9/18	S	.0500	.0050	.8000	1.4000	BDL	3.2000
22951	80/10/ 6	W	BDL	.0020	1.2000	2.1000	BDL	3.8000
22951	80/10/30	SW	BDL	.0040	1.3000	4.0000	BDL	2.8000
22951	80/12/17	SW	.2300	.0050	0.8000	2.5000	BDL	3.6000
22951	80/12/29	N	.3900	.0060	3.4000	7.2000	BDL	9.5000
ARITH MEAN			.0698	.0032	2.4085	4.2158	N/A	6.7368
STD DEV			.1261	.0015	2.0385	2.8255	N/A	5.0040
GEO MEAN			.0098	.0028	1.6871	3.2840	N/A	5.3259
MAXIMUM			.3900	.0060	8.0950	10.8000	N/A	20.2000
MINIMUM			.0010	.0010	.2030	.4000	N/A	1.7000
# OF SAMPLE			10	11	19	19	0	19

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22952	80/ 1/ 1	WNW	.0030	BDL	2.0170	2.8000	BDL	8.2000
22952	80/ 2/ 9	NW	.0040	BDL	1.2870	2.8000	BDL	6.0000
22952	80/ 2/21	ENE	BDL	.0020	3.5600	BDL	BDL	10.9000
22952	80/ 3/10	SSW	BDL	BDL	1.8100	2.8000	BDL	7.4000
22952	80/ 3/28	NE	.0030	BDL	2.0780	4.2000	BDL	5.4000
22952	80/ 4/ 9	S	BDL	BDL	2.2140	1.1000	BDL	4.5000
22952	80/ 4/21	NW	BDL	BDL	.1780	1.4000	BDL	3.0000
22952	80/ 5/ 9	W	BDL	BDL	BDL	1.6000	BDL	2.0000
22952	80/ 5/21	NE	BDL	BDL	2.1850	5.7000	BDL	7.2000
22952	80/ 6/ 8	NW	BDL	BDL	.1970	.5000	BDL	1.6000
22952	80/ 6/14	SSW	BDL	BDL	7.0300	4.2000	BDL	20.9000
22952	80/ 7/ 2	NW	BDL	.0020	2.6000	3.9000	BDL	9.4000
22952	80/ 7/ 8	NW	BDL	.0020	2.4000	2.4000	BDL	9.4000
22952	80/ 8/31	SW	N/A	N/A	N/A	N/A	N/A	N/A
22952	80/ 9/12	NE	BDL	.0030	.7000	3.1000	BDL	2.5000
22952	80/ 9/18	S	BDL	.0030	.7000	1.3000	BDL	2.8000
22952	80/10/ 6	W	BDL	.0030	.9000	1.7000	BDL	3.8000
22952	80/10/30	SW	BDL	.0020	1.0000	3.4000	BDL	2.6000
22952	80/12/17	SW	.0400	.0060	0.7000	2.0000	BDL	3.6000
22952	80/12/29	N	.0900	.0040	3.0000	4.9000	BDL	10.2000
ARITH MEAN			.0280	.0030	1.8193	2.6237	N/A	6.3895
STD DEV			.0341	.0012	1.5741	1.4728	N/A	4.4942
GEO MEAN			.0105	.0028	1.0470	1.9388	N/A	5.1317
MAXIMUM			.0900	.0060	7.0300	5.7000	N/A	20.9000
MINIMUM			.0030	.0020	.0100	.0500	N/A	1.6000
# OF SAMPLE			5	9	19	19	0	19

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22953	80/ 1/ 1	WNW	1130	BDL	2.5090	3.8000	BDL	8.0000
22953	80/ 1/10	E	.0100	BDL	1.1190	3.2000	BDL	3.6000
22953	80/ 1/ 9	NW	.0670	BDL	1.4560	2.7000	BDL	5.0000
22953	80/ 2/21	ENE	BDL	.0020	5.4180	9.7000	BDL	12.2000
22953	80/ 3/28	NE	.0900	BDL	2.0590	4.2000	BDL	7.5000
22953	80/ 4/ 9	S	BDL	BDL	1.3480	2.1000	BDL	4.1000
22953	80/ 4/21	NW	BDL	BDL	.7420	1.6000	BDL	2.8000
22953	80/ 5/ 9	W	0660	BDL	.5910	1.7000	BDL	2.0000
22953	80/ 5/21	NE	.1520	BDL	3.1780	6.6000	BDL	8.3000
22953	80/ 6/ 8	NW	.0290	BDL	.3310	.3000	BDL	1.1000
22953	80/ 6/14	SSW	.1180	BDL	7.0390	7.5000	BDL	18.9000
22953	80/ 7/ 2	NW	BDL	.0030	1.7000	3.5000	BDL	6.0000
22953	80/ 7/ 8	NW	BDL	.0030	2.0000	2.2000	BDL	7.7000
22953	80/ 8/31	SW	BDL	.0040	4.7000	4.8000	BDL	14.8000
22953	80/ 9/12	NE	BDL	.0030	.6000	3.3000	BDL	2.7000
22953	80/ 9/18	S	.0600	.0040	.7000	1.2000	BDL	2.8000
22953	80/10/ 6	W	N/A	N/A	N/A	N/A	N/A	N/A
22953	80/10/30	SW	BDL	.0040	1.3000	3.7000	BDL	2.5000
22953	80/12/17	SW	.0500	.0040	.9000	2.3000	BDL	3.1000
22953	80/12/29	N	.2000	.0080	.3000	6.5000	BDL	8.4000
ARITH MEAN			.0868	.0039	2.0079	3.7316	N/A	6.3947
STD DEV			.0530	.0016	1.8142	2.3236	N/A	4.5994
GEO MEAN			.0679	.0036	1.3875	2.9631	N/A	4.9784
MAXIMUM			.2000	.0080	7.0390	9.7000	N/A	18.9000
MINIMUM			.0100	.0020	.3000	.3000	N/A	1.1000
# OF SAMPLE			11	9	19	19	0	19

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22955	80/ 2/ 9	NW	.5040	.0050	1.0190	3.1000	BDL	6.7000
22955	80/ 2/21	ENE	BDL	BDL	5.6720	8.6000	BDL	12.9000
22955	80/ 3/10	SSW	BDL	BDL	2.9310	3.3000	BDL	7.7000
22955	80/ 3/28	NE	.0160	N/A	2.4470	6.0000	BDL	7.0000
22955	80/ 4/ 9	S	BDL	BDL	1.0000	2.1000	BDL	4.9000
22955	80/ 5/ 9	W	.1200	BDL	.5820	1.9000	BDL	1.9000
22955	80/ 6/ 8	NW	.0530	BDL	.5020	.7000	BDL	1.9000
22955	80/ 6/14	SSW	.0610	BDL	7.0560	7.0000	BDL	20.8000
22955	80/ 7/ 2	NW	N/A	N/A	N/A	N/A	N/A	N/A
22955	80/ 7/ 8	NW	N/A	N/A	N/A	N/A	N/A	N/A
22955	80/ 8/31	SW	BDL	.0020	.4000	2.8000	BDL	14.4000
22955	80/ 9/12	NE	BDL	.0050	.5000	3.1000	BDL	2.9000
22955	80/ 9/18	S	BDL	.0050	.5000	1.5000	BDL	2.3000
22955	80/10/ 6	W	BDL	.0020	1.0000	1.8000	BDL	3.4000
22955	80/10/30	SW	BDL	.0020	1.1000	3.6000	BDL	2.4000
22955	80/12/17	SW	.4300	.0140	.9000	2.4000	BDL	4.4000
22955	80/12/29	N	.4400	.0070	3.9000	7.3000	BDL	9.7000
ARITH MEAN			.2320	.0052	1.9673	3.6800	N/A	6.8867
STD DEV			.1989	.0037	2.0001	2.3063	N/A	5.3160
GEO MEAN			.1289	.0042	1.2625	3.0123	N/A	5.2147
MAXIMUM			.5040	.0140	7.0560	8.6000	N/A	20.8000
MINIMUM			.0160	.0020	.4000	.7000	N/A	1.9000
# OF SAMPLE			7	8	15	15	0	15

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22957	80/ 1/ 1	WNW	.0900	BDL	2.3170	3.6000	BDL	6.7000
22957	80/ 1/10	E	2.9160	BDL	1.2610	5.0000	BDL	4.6000
22957	80/ 2/ 9	NW	.2530	.0020	2.0390	3.5000	BDL	8.2000
22957	80/ 2/21	ENE	BDL	.0010	5.3360	BDL	BDL	11.5000
22957	80/ 3/10	SSW	BDL	.0010	2.9580	4.2000	BDL	7.2000
22957	80/ 3/28	NE	.0500	BDL	2.1550	5.4000	BDL	8.2000
22957	80/ 4/ 9	S	.0500	BDL	2.0110	2.0000	BDL	4.6000
22957	80/ 4/21	NW	.1370	.0030	.5230	1.8000	BDL	2.3000
22957	80/ 5/ 9	W	.1180	.0010	.6230	2.2000	BDL	2.2000
22957	80/ 5/21	NE	.1660	.0020	3.0900	7.0000	BDL	7.0000
22957	80/ 6/ 8	NW	.0440	.0010	.5380	.5000	BDL	1.6000
22957	80/ 6/14	SSW	.2080	.0020	7.6130	9.5000	BDL	19.7000
22957	80/ 7/ 2	NW	BDL	.0020	2.4000	4.0000	BDL	8.5000
22957	80/ 7/ 8	NW	BDL	.0050	2.0000	2.0000	BDL	8.3000
22957	80/ 8/31	SW	BDL	.0050	2.9000	3.1000	BDL	11.7000
22957	80/ 9/12	NE	BDL	.0020	.5000	2.8000	BDL	2.5000
22957	80/ 9/18	S	BDL	.0060	.6000	1.4000	BDL	2.9000
22957	80/10/ 6	W	BDL	.0030	1.1000	1.9000	BDL	3.4000
22957	80/10/30	SW	BDL	.0050	1.0000	3.6000	BDL	2.7000
22957	80/12/17	SW	.5100	.0230	.8000	2.4000	BDL	4.1000
22957	80/12/ ?	N	.4000	.0070	3.5000	6.6000	BDL	9.2000
ARITH MEAN			.4118	.0043	2.1554	3.4452	N/A	6.3381
STD DEV			.7676	.0046	1.7155	2.2248	N/A	4.1824
GEO MEAN			.1751	.0031	1.6085	2.4698	N/A	5.1901
MAXIMUM			2.9160	.0230	7.6130	9.5000	N/A	19.7000
MINIMUM			.0440	.0010	.5000	.0500	N/A	1.6000
# OF SAMPLE			12	21	21	21	0	21

WHATMAN 41 FILTER - 1980 PARTICULATE IONS DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22961	80/ 1/ 1	WNW	BDL	BDL	2.1980	3.6000	BDL	7.8000
22961	80/ 1/10	E	.1660	BDL	1.0870	3.2000	BDL	3.6000
22961	80/ 2/ 9	NW	.2840	BDL	1.8420	2.8000	BDL	4.6000
22961	80/ 2/21	ENE	BDL	BDL	5.0350	6.7000	BDL	12.4000
22961	80/ 3/28	NE	.0230	BDL	2.9630	5.7000	BDL	7.7000
22961	80/ 4/ 9	S	BDL	.0040	3.1090	2.0000	BDL	4.5000
22961	80/ 5/ 9	W	.2030	.0020	.4070	2.5000	BDL	2.5000
22961	80/ 5/21	NE	.3190	.0030	2.3110	8.0000	BDL	8.6000
22961	80/ 6/ 8	NW	.1360	BDL	.6220	.9000	BDL	2.3000
22961	80/ 6/14	SSW	.1850	BDL	5.9330	7.6000	BDL	20.6000
22961	80/ 7/ 2	NW	BDL	.0060	2.1000	4.8000	BDL	7.8000
22961	80/ 7/ 8	NW	BDL	.0030	2.4000	3.0000	BDL	9.1000
22961	80/ 8/31	SW	BDL	.0060	2.2000	3.1000	BDL	8.6000
22961	80/ 9/12	NE	BDL	.0030	.7000	3.5000	BDL	3.6000
22961	80/ 9/18	S	BDL	.0080	.8000	1.7000	BDL	2.9000
22961	80/10/ 6	W	BDL	.0080	1.1000	2.3000	BDL	3.7000
22961	80/10/30	SW	BDL	.0150	1.2000	4.5000	BDL	2.7000
22961	80/12/17	SW	.2700	.0140	.7000	2.7000	BDL	3.7000
22961	80/12/29	N	.2000	.0070	3.7000	6.5000	BDL	9.9000
ARITH MEAN			.1984	.0066	2.1267	3.9526	N/A	6.6632
STD DEV			.0836	.0041	1.4749	2.0035	N/A	4.3903
GEO MEAN			.1659	.0055	1.6590	3.4469	N/A	5.5355
MAXIMUM			.3190	.0150	5.9330	8.0000	N/A	20.6000
MINIMUM			.0230	.0020	.4070	.9000	N/A	2.3000
# OF SAMPLE			9	12	19	19	0	19

CARBON DATA (UG/M3)

STATION NUMBER	DATE	WIND DIRECTION	CT	CF	RATIO (CF/CT)
22901	80/ 1/ 1	WNW	1.40	1.50	1.071
22901	80/ 2/21	ENE	5.50	1.30	.236
22901	80/ 3/10	SSW	3.20	.60	.188
22901	80/ 3/28	NE	3.20	1.00	.313
22901	80/ 4/ 9	S	1.30	.80	.615
22901	80/ 4/21	NE	2.50	.40	.160
22901	80/ 5/ 9	W	5.60	.30	.054
22901	80/ 5/21	NE	7.20	1.20	.167
22901	80/ 6/ 8	NW	6.10	.40	.066
22901	80/ 6/14	SSW	8.60	1.80	.209
22901	80/ 7/ 2	NW	5.60	1.40	.250
22901	80/ 7/ 8	NW	4.80	1.40	.292
22901	80/ 8/31	SW	4.20	.80	.190
22901	80/ 9/12	NE	6.20	1.00	.161
22901	80/ 9/18	S	2.80	1.00	.357
22901	80/10/ 6	W	5.60	.60	.107
22901	80/10/30	SW	2.30	1.10	.478
22901	80/12/17	SW	4.60	1.10	.239
22901	80/12/29	N	5.50	1.50	.273
ARITH MEAN			4.54	1.01	
STD DEV			1.92	.41	
GEO MEAN			4.05	.91	
MAXIMUM			8.60	1.80	
MINIMUM			1.30	.30	
# OF SAMPLE			19	19	

CARBON DATA (UG/M3)

STATION NUMBER	DATE	WIND DIRECTION	CT	CF	RATIO (CF/CT)
22904	80/ 1/ 1	WNW	.90	.20	.222
22904	80/ 1/10	E	3.50	.40	.114
22904	80/ 2/ 9	NW	2.80	.50	.179
22904	80/ 2/21	ENE	4.90	1.30	.265
22904	80/ 3/10	SSW	.70	.40	.571
22904	80/ 3/28	NE	3.20	.80	.250
22904	80/ 4/ 9	S	2.30	.70	.304
22904	80/ 4/21	NW	6.40	.90	.141
22904	80/ 5/21	NE	11.10	.90	.081
22904	80/ 6/ 8	NW	4.90	.60	.122
22904	80/ 6/14	SSW	12.30	2.70	.220
22904	80/ 7/ 8	NW	5.30	.60	.113
22904	80/ 8/31	SW	6.20	1.00	.161
22904	80/ 9/12	NE	6.40	.70	.109
22904	80/10/ 6	W	2.40	.90	.375
22904	80/10/30	SW	4.30	1.20	.279
22904	80/12/17	SW	3.90	2.10	.538
22904	80/12/29	N	6.40	1.60	.250
ARITH MEAN			4.88	.97	
STD DEV			2.97	.61	
GEO MEAN			3.94	.81	
MAXIMUM			12.30	2.70	
MINIMUM			.70	.20	
# OF SAMPLE			18	18	

CARBON DATA (UG/M3)

STATION NUMBER	DATE	WIND DIRECTION	CT	CF	RATIO (CF/CT)
22951	80/ 1/ 1	WNW	4.90	.20	.041
22951	80/ 1/10	E	7.50	.80	.107
22951	80/ 2/ 9	NW	4.30	.70	.163
22951	80/ 2/21	ENE	6.20	1.60	.258
22951	80/ 3/10	SSW	3.70	.60	.162
22951	80/ 3/28	NE	3.60	1.00	.278
22951	80/ 4/ 9	S	2.30	.20	.087
22951	80/ 4/21	NE	4.30	.10	.023
22951	80/ 5/ 9	W	7.30	.90	.123
22951	80/ 5/21	NE	8.40	.70	.083
22951	80/ 6/ 8	NW	5.00	.30	.060
22951	80/ 6/14	SSW	10.40	2.00	.192
22951	80/ 7/ 2	NW	6.70	.90	.134
22951	80/ 7/ 8	NW	5.70	1.20	.211
22951	80/ 8/31	SW	6.10	1.40	.230
22951	80/ 9/12	NE	5.10	.80	.157
22951	80/ 9/18	S	2.60	1.60	.615
22951	80/10/ 6	W	2.90	2.10	.724
22951	80/10/30	SW	5.50	4.90	.891
22951	80/12/17	SW	3.20	.40	.125
22951	80/12/29	N	7.40	1.10	.149
ARITH MEAN			5.39	1.12	
STD DEV			2.03	1.01	
GEO MEAN			5.00	.79	
MAXIMUM			10.40	4.90	
MINIMUM			2.30	.10	
# OF SAMPLE			21	21	

CARBON DATA (UG/M3)

STATION NUMBER	DATE	WIND DIRECTION	CT	CF	RATIO (CF/CT)
22952	80/ 1/ 1	WNW	2.70	.60	.222
22952	80/ 2/ 9	NW	3.40	.50	.147
22952	80/ 2/21	ENE	6.70	1.00	.149
22952	80/ 3/10	SSW	2.20	.30	.136
22952	80/ 3/28	NE	2.60	.60	.231
22952	80/ 4/ 9	SE	1.80	1.40	.778
22952	80/ 4/21	NW	3.30	.10	.030
22952	80/ 5/ 9	W	2.80	.20	.071
22952	80/ 5/21	NE	7.30	.50	.068
22952	80/ 6/ 8	NW	6.30	.50	.079
22952	80/ 6/14	SSW	8.90	1.30	.146
22952	80/ 7/ 2	NW	5.20	.70	.135
22952	80/ 7/ 8	NW	6.70	.30	.045
22952	80/ 9/12	NE	5.50	.20	.036
22952	80/ 9/18	S	1.80	.40	.222
22952	80/10/ 6	W	2.50	.10	.040
22952	80/10/30	SW	2.90	.10	.034
22952	80/12/17	SW	1.70	.10	.059
22952	80/12/29	N	5.80	1.30	.224
ARITH MEAN			4.22	.54	
STD DEV			2.16	.42	
GEO MEAN			3.69	.38	
MAXIMUM			8.90	1.40	
MINIMUM			1.70	.10	
# OF SAMPLE			19	19	

CARBON DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22953	80/ 1/ 1	WNW	2.10	.10	.048
22953	80/ 1/10	E	3.90	.50	.128
22953	80/ 2/ 9	NW	3.80	.90	.237
22953	80/ 2/21	ENE	5.40	.70	.130
22953	80/ 3/10	SSW	3.10	1.20	.387
22953	80/ 3/28	NE	3.90	1.10	.282
22953	80/ 4/ 9	SE	2.00	.90	.450
22953	80/ 4/21	NW	4.10	2.90	.707
22953	80/ 5/ 9	W	3.50	.60	.171
22953	80/ 5/21	NE	8.30	1.50	.181
22953	80/ 6/ 8	NW	6.30	.70	.111
22953	80/ 6/14	SSW	9.60	1.70	.177
22953	80/ 7/ 2	NW	6.10	.40	.066
22953	80/ 7/ 8	NW	7.10	.70	.099
22953	80/ 8/31	SW	6.00	.50	.083
22953	80/ 9/12	NE	5.30	1.20	.226
22953	80/ 9/18	S	2.20	1.30	.591
22953	80/10/ 6	W	4.90	.50	.102
22953	80/10/30	SW	4.60	1.00	.217
22953	80/12/17	SW	2.50	1.00	.400
22953	80/12/29	N	5.20	1.30	.250
ARITH MEAN			4.76	.99	
STD DEV			1.97	.58	
GEO MEAN			4.35	.82	
MAXIMUM			9.60	2.90	
MINIMUM			2.00	.10	
# OF SAMPLE			21	21	

CARBON DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22955	80/ 2/21	ENE	5.60	1.10	.196
22955	80/ 3/10	SSW	2.30	1.40	.609
22955	80/ 3/28	NE	6.20	2.40	.387
22955	80/ 4/ 9	S	1.80	.70	.389
22955	80/ 5/ 9	W	2.30	.70	.304
22955	80/ 6/ 8	NW	4.80	.20	.042
22955	80/ 6/14	SSW	7.50	1.10	.147
22955	80/ 7/ 2	NW	7.50	.80	.107
22955	80/ 7/ 8	NW	8.20	.70	.085
22955	80/ 8/31	SW	6.20	1.20	.194
22955	80/ 9/12	NE	5.40	.90	.167
22955	80/ 9/18	S	2.80	.80	.286
22955	80/10/ 6	W	2.40	.80	.333
22955	80/10/30	SW	2.90	1.50	.517
22955	80/12/17	SW	3.20	1.00	.313
22955	80/12/29	N	6.30	1.20	.190
ARITH MEAN			4.71	1.03	
STD DEV			2.10	.47	
GEO MEAN			4.21	.92	
MAXIMUM			8.20	2.40	
MINIMUM			1.80	.20	
# OF SAMPLE			16	16	

CARBON DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22957	80/ 1/ 1	WNW	1.50	.10	.067
22957	80/ 1/10	E	5.00	.90	.180
22957	80/ 2/ 9	NW	7.00	1.10	.157
22957	80/ 2/21	ENE	8.40	1.60	.190
22957	80/ 3/10	SSW	3.60	.40	.111
22957	80/ 3/28	NE	4.70	.50	.106
22957	80/ 4/ 9	S	2.50	.30	.120
22957	80/ 4/21	NW	7.70	.50	.065
22957	80/ 5/21	NE	8.90	1.00	.112
22957	80/ 6/ 8	NW	4.90	.60	.122
22957	80/ 6/14	SSW	11.60	2.00	.172
22957	80/ 7/ 8	NW	5.40	.90	.167
22957	80/ 8/31	SW	13.50	.40	.030
22957	80/ 9/12	NE	4.90	1.60	.327
22957	80/ 9/18	S	2.70	.80	.296
22957	80/10/ 6	W	2.50	.30	.120
22957	80/10/30	SW	2.70	.30	.111
22957	80/12/17	SW	7.00	.70	.100
22957	80/12/29	N	7.10	.90	.127
ARITH MEAN			5.87	.78	
STD DEV			3.12	.50	
GEO MEAN			5.06	.63	
MAXIMUM			13.50	2.00	
MINIMUM			1.50	.10	
# OF SAMPLE			19	19	

CARBON DATA (UG/M3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22961	80/ 1/ 1	WNW	1.80	.40	.222
22961	80/ 1/10	E	5.60	1.00	.179
22961	80/ 2/ 9	NW	4.00	.60	.150
22961	80/ 2/21	ENE	6.30	.80	.127
22961	80/ 3/10	SSW	3.20	.40	.125
22961	80/ 3/28	NE	3.70	.60	.162
22961	80/ 4/ 9	S	2.30	.60	.261
22961	80/ 5/21	NE	12.50	1.70	.136
22961	80/ 6/ 8	NW	4.80	.50	.104
22961	80/ 6/14	SSW	14.70	3.60	.245
22961	80/ 7/ 2	NW	7.40	.80	.108
22961	80/ 7/ 8	NW	5.40	.50	.093
22961	80/ 8/31	SW	5.40	.40	.074
22961	80/10/ 6	W	2.80	.30	.107
22961	80/10/30	SW	3.80	1.00	.263
22961	80/12/17	SW	6.10	2.00	.328
22961	80/12/29	N	7.20	2.00	.278
ARITH MEAN			5.71	1.01	
STD DEV			3.31	.84	
GEO MEAN			4.94	.78	
MAXIMUM			14.70	3.60	
MINIMUM			1.80	.30	
# OF SAMPLE			17	17	

Appendix 2

NEMP PRECIPITATION DATA COLLECTED DURING JANUARY TO DECEMBER 1980.

Data are presented on a monthly basis according to sampling station. All concentrations are expressed in mg/l except precipitation volume which is expressed in ml. Total acidity is expressed as $CaCO_3$. Sampling station SW40 was set up for intercomparison purposes. During the study period only two months of data were collected at SW40. Dashes represent missing or unavailable data. The NO_3^- and NH_4^+ concentrations are expresed as $N\text{-}NO_3^-$ and $N\text{-}NH_4^+$ respectively.

PK/mb/AR14-32

PRECIP IONS DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22902	80/ 1/ 0	.8200	.2740	.4100	.0010	5.5000	.600	4.700	25.200	-
22902	80/ 2/ 0	.7000	.6700	1.1500	.0150	7.1000	-	4.000	-	185
22902	80/ 3/ 0	.1800	.2900	.6200	-	3.0500	4.750	4.220	33.200	2320
22902	80/ 4/ 0	.1100	.3220	.4400	-	3.1500	4.540	4.270	27.800	2715
22902	80/ 5/ 0	.1900	.8200	.6700	-	4.1500	2.180	4.890	23.500	1195
22902	80/ 6/ 0	.1500	.5300	.6700	-	6.1500	6.310	4.030	50.300	1958
22902	80/ 7/ 0	.3600	.6300	.5500	-	2.9000	6.650	4.180	42.700	1610
22902	80/ 8/ 0	.1700	.3000	.5400	-	4.1000	5.560	4.010	37.700	-
22902	80/ 9/ 0	.0800	-	.7000	-	5.4500	6.020	4.030	47.000	445
22902	80/10/ 0	.2100	.5000	.5600	-	3.1000	3.860	4.400	24.600	1115
22902	80/11/ 0	.3800	-	1.0700	-	6.6000	-	4.260	-	205
22902	80/12/ 0	-	-	-	-	-	-	-	-	-
ARITH MEAN		.3045	.4818	.6709	.0080	4.6591	4.497	4.272	34.667	
STD DEV		.2333	.1865	.2252	.0070	1.4844	1.897	.278	9.633	
GEO MEAN		.2360	.4464	.6385	.0039	4.4237	3.767	4.263	33.360	
MAXIMUM		.8200	.8200	1.1500	.0150	7.1000	6.650	4.890	50.300	
MINIMUM		.0800	.2740	.4100	.0010	2.9000	.600	4.000	23.500	
# OF SAMPLE		11	9	11	2	11	9	11	9	
VOL WT MEAN		.1952	.4740	.5958	.0150	3.9025	4.930	4.270	34.880	

PRECIP IONS DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22953	80/ 1/ 0	.4900	.1650	.4100	.0020	3.4000	2.100	4.400	22.600	-
22953	80/ 2/ 0	.7000	.9400	1.1500	.0150	7.1000	4.480	4.370	-	275
22953	80/ 3/ 0	.2600	.2420	.7200	-	3.7700	5.530	4.110	42.200	2800
22953	80/ 4/ 0	.3000	.3450	.6400	-	4.3000	6.040	4.140	32.400	3070
22953	80/ 5/ 0	.3200	.5600	.7300	-	5.1100	4.910	4.230	38.000	1115
22953	80/ 6/ 0	.2000	.5900	.8400	-	7.1500	8.120	3.890	64.000	2995
22953	80/ 7/ 0	.0900	.3200	.3800	-	3.4000	5.860	4.110	44.300	3300
22953	80/ 8/ 0	.3200	.8000	1.0400	-	8.4000	9.350	3.800	74.500	1520
22953	80/ 9/ 0	.2400	.9300	.7600	-	7.2500	7.690	3.990	60.000	-
22953	80/10/ 0	.2300	.7700	.6700	-	3.8000	4.010	4.400	29.000	2005
22953	80/11/ 0	.4100	1.7000	1.5100	-	7.5000	4.990	4.220	46.800	715
22953	80/12/ 0	-	-	-	-	-	-	-	-	-
ARITH MEAN		.3234	.6729	.8045	.0085	5.5618	5.735	4.151	45.380	
STD DEV		.1558	.4169	.3118	.0065	1.8342	1.948	.192	15.595	
GEO MEAN		.2877	.5517	.7471	.0055	5.2549	5.363	4.144	42.709	
MAXIMUM		.7000	1.7000	1.5100	.0150	8.4000	9.350	4.400	74.500	
MINIMUM		.0900	.1650	.3800	.0020	3.4000	2.100	3.800	22.600	
# OF SAMPLE		11	11	11	2	11	11	11	10	
VOL WT MEAN		.2434	.8300	.7241	.0150	5.0458	6.190	4.100	45.817	

PRECIP IONS DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22954	80/ 1/ 0	.3500	.1230	.3100	.0020	3.1000	1.100	4.500	19.800	-
22954	80/ 2/ 0	.5900	.6000	1.2400	.0070	6.4000	-	4.100	-	145
22954	80/ 3/ 0	-	-	-	-	-	-	-	-	-
22954	80/ 4/ 0	.1500	.2780	.5000	-	3.5500	4.950	4.210	32.800	2775
22954	80/ 5/ 0	.2100	.6200	.6500	-	4.2500	3.100	4.530	25.500	1215
22954	80/ 6/ 0	.1300	.4700	.6200	-	5.3000	6.560	4.010	49.100	2825
22954	80/ 7/ 0	.1400	.3000	.5000	-	4.2500	5.900	4.100	43.100	1850
22954	80/ 8/ 0	.1300	.3200	.5400	-	4.5500	6.070	3.990	41.600	4450
22954	80/ 9/ 0	.1300	.4300	.5600	-	-	6.180	4.010	44.700	1756
22954	80/10/ 0	.7800	.7200	.4500	-	2.6000	3.640	4.620	19.400	1705
22954	80/11/ 0	.3200	1.5000	1.2500	-	5.5500	4.990	4.220	46.800	-
22954	80/12/ 0	.5000	.4600	.6400	-	3.3000	6.200	4.290	31.400	580
ARITH MEAN		.3118	.5292	.6618	.0045	4.2850	4.869	4.235	35.420	
STD DEV		.2129	.3483	.2899	.0025	1.1371	1.665	.215	10.593	
GEO MEAN		.2511	.4410	.6103	.0037	4.1349	4.406	4.229	33.643	
MAXIMUM		.7800	1.5000	1.2500	.0070	6.4000	6.560	4.620	49.100	
MINIMUM		.1300	.1230	.3100	.0020	2.6000	1.100	3.990	19.400	
# OF SAMPLE		11	11	11	2	10	10	11	10	
VOL WT MEAN		.2206	.4145	.5584	.0070	4.2082	5.515	4.153	38.199	

PRECIP IONS DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22956	80/ 1/ 0	.7100	.1670	.5000	.0040	4.1000	.100	5.100	18.500	-
22956	80/ 2/ 0	-	-	-	-	-	-	-	-	-
22956	80/ 3/ 0	.2200	.2080	.6500	-	3.3900	5.130	4.180	37.800	1570
22956	80/ 4/ 0	.3000	.4540	.9900	-	6.0500	-	-	-	1680
22956	80/ 5/ 0	.4000	-	.9100	-	8.0500	2.140	-	48.000	755
22956	80/ 6/ 0	.2000	.7100	.8400	-	7.9000	7.960	3.900	65.000	2665
22956	80/ 7/ 0	.1400	.3200	.5600	-	5.7500	6.620	4.050	52.000	1025
22956	80/ 8/ 0	.2300	.4100	.7200	-	5.9000	7.860	3.870	57.500	2110
22956	80/ 9/ 0	.2300	.7800	.8000	-	7.2500	8.430	3.860	64.000	1400
22956	80/10/ 0	.2600	.4100	.4500	-	3.9000	5.280	4.140	36.900	1955
22956	80/11/ 0	.3100	.8800	1.0600	-	5.4000	4.830	4.160	44.600	450
22956	80/12/ 0	.3700	.4600	.5600	-	3.9500	3.640	4.520	25.400	370
ARITH MEAN		.3044	.4799	.7491	.0040	5.6036	5.199	4.200	44.970	
STD DEV		.1465	.2241	.1772	.0000	1.5701	2.551	.372	14.742	
GEO MEAN		.2800	.4245	.7284	.0040	5.3805	3.590	4.185	42.090	
MAXIMUM		.7100	.8800	1.0600	.0040	8.0500	8.430	5.100	65.000	
MINIMUM		.1400	.1670	.5000	.0040	3.3900	.100	3.870	18.500	
# OF SAMPLE		11	10	11	1	11	10	9	10	
VOL WT MEAN		.2444	.5016	.7709	.0000	5.9103	6.494	4.014	51.597	

PRECIP IONS DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22958	80/ 1/ 0	.6800	.4430	.5200	.0010	4.4000	.100	4.900	21.100	-
22958	80/ 2/ 0	.9100	1.3900	1.4300	.0130	6.1500	-	5.150	-	255
22958	80/ 3/ 0	.2400	.6300	.7300	-	3.6400	4.390	4.270	35.000	2900
22958	80/ 4/ 0	.1800	.6580	.6800	-	4.9000	4.630	4.230	35.400	2920
22958	80/ 5/ 0	.2400	.9800	.7700	-	5.4600	2.170	-	26.500	1015
22958	80/ 6/ 0	.1500	.8000	.6700	-	6.5000	5.490	4.080	48.500	2855
22958	80/ 7/ 0	.1400	.6500	.6400	-	5.3500	5.220	4.170	43.500	2200
22958	80/ 8/ 0	.2200	.6300	.7500	-	5.8500	6.910	3.920	52.500	3380
22958	80/ 9/ 0	.4200	5.3000	.4800	-	7.1500	3.880	-	51.000	1445
22958	80/10/ 0	.2200	.5200	.6400	-	3.3500	4.580	4.260	32.400	2050
22958	80/11/ 0	.2500	.9200	.9200	-	4.4500	4.370	4.250	36.000	565
22958	80/12/ 0	.3000	.6200	.5500	-	3.3000	4.160	4.260	32.500	440
ARITH MEAN		.3292	1.1284	.7317	.0070	5.0417	4.191	4.349	37.673	
STD DEV		.2247	1.2809	.2397	.0060	1.2030	1.706	.358	9.619	
GEO MEAN		.2772	.8430	.7015	.0036	4.8935	3.140	4.335	36.393	
MAXIMUM		.9100	5.3000	1.4300	.0130	7.1500	6.910	5.150	52.500	
MINIMUM		.1400	.4430	.4800	.0010	3.3000	.100	3.920	21.100	
# OF SAMPLE		12	12	12	2	12	11	10	11	
VOL WT MEAN		.2278	1.0596	.6893	.0130	5.1569	4.980	4.164	41.390	

PRECIP IONS DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22959	80/ 1/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 2/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 3/ 0	.8600	.5400	1.4200	-	6.4600	4.850	4.290	49.300	830
22959	80/ 4/ 0	.1100	1.0200	.7900	-	4.9500	4.210	4.460	30.200	2325
22959	80/ 5/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 6/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 7/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 8/ 0	-	-	-	-	-	-	-	-	-
22959	80/ 9/ 0	-	-	-	-	-	-	-	-	-
22959	80/10/ 0	-	-	-	-	-	-	-	-	-
22959	80/11/ 0	-	-	-	-	-	-	-	-	-
22959	80/12/ 0	-	-	-	-	-	-	-	-	-
ARITH MEAN		.4850	.7800	1.1050	-	5.7050	4.530	4.375	39.750	
STD DEV		.3750	.2400	.3150	-	.7550	.320	.085	9.550	
GEO MEAN		.3074	.7422	1.0392	-	5.6348	4.519	4.374	38.586	
MAXIMUM		.8600	1.0200	1.4200	-	6.4600	4.850	4.460	49.300	
MINIMUM		.1100	.5400	.7900	-	4.9500	4.210	4.290	30.200	
# OF SAMPLE		2	2	2	-	2	2	2	2	
VOL WT MEAN		.3073	.8937	.9557	-	5.3472	4.378	4.415	35.225	

PRECIP IONS DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CL	NH3	NO3	N	SO4	ACID	PH	SCON	VOL
22960	80/ 1/ 0	.3800	.1040	.3000	.0010	2.8000	2.900	4.300	26.500	-
22960	80/ 2/ 0	.9500	.7300	1.3300	.0120	7.1000	-	4.240	-	205
22960	80/ 3/ 0	.2200	.2660	.4200	-	3.1000	4.940	4.190	35.800	1150
22960	80/ 4/ 0	.1100	.3160	.4800	-	3.3000	4.780	4.220	30.400	3065
22960	80/ 5/ 0	.2600	.5500	.6600	-	4.1200	2.380	4.750	24.000	685
22960	80/ 6/ 0	.1500	.5400	.6100	-	6.2500	6.130	4.060	48.900	1705
22960	80/ 7/ 0	.1000	.3300	.5200	-	4.9500	6.520	4.060	48.500	2120
22960	80/ 8/ 0	.2700	.2800	.1600	-	.2500	6.830	4.050	45.400	4665
22960	80/ 9/ 0	-	-	-	-	-	-	-	-	1765
22960	80/10/ 0	.2300	.6200	.6000	-	3.4000	4.340	4.330	28.900	1515
22960	80/11/ 0	-	-	-	-	-	-	-	-	-
22960	80/12/ 0	-	-	-	-	-	-	-	-	-
ARITH MEAN		.2967	.4151	.5867	.0065	3.9189	4.852	4.244	34.050	
STD DEV		.2452	.1913	.3055	.0055	1.9059	1.522	.204	9.533	
GEO MEAN		.2342	.3627	.5113	.0035	3.0378	4.578	4.240	34.806	
MAXIMUM		.9500	.7300	1.3300	.0120	7.1000	6.830	4.750	48.900	
MINIMUM		.1000	.1040	.1600	.0010	.2500	2.380	4.050	24.000	
# OF SAMPLE		9	9	9	2	9	8	9	8	
VOL WT MEAN		.2011	.3750	.4439	.0120	3.0043	5.681	4.160	39.755	

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22902	80/ 1/ 0	1.4000	.0003	.0023	.0370	.0600	.3900	.0200	.0300	.0013	.0076	-	-	.0110
22902	80/ 2/ 0	1.3000	.0025	.0020	.1140	.0300	.2300	.0140	.3500	.0030	.0350	.0060	-	.1800
22902	80/ 3/ 0	.2500	.0002	.0010	.0190	.0100	.0400	.0040	.0300	.0010	.0090	.0050	-	.0060
22902	80/ 4/ 0	.2400	.0001	.0010	.0190	.0300	.0550	.0030	.0300	.0010	.0090	.0050	-	.0020
22902	80/ 5/ 0	-	.0050	.0010	.0370	.0700	.2400	.0130	.0500	.0010	.0050	.0100	-	.0020
22902	80/ 6/ 0	.5900	.0002	.0020	.0350	.1000	.1400	.0080	.0800	.0010	.0030	.0050	-	.0030
22902	80/ 7/ 0	.5000	.0002	.0010	.0310	.1200	.1300	.0040	.0400	.0010	.0160	.0410	-	.0020
22902	80/ 8/ 0	.2700	.0002	.0040	.0190	.0300	.0800	.0020	.0300	.0010	.0060	-	-	.0040
22902	80/ 9/ 0	.4300	.0002	.0010	.0200	.0400	.1700	.0070	.0400	.0010	.0070	.0020	-	.0280
22902	80/10/ 0	.5400	.0001	.0010	.0590	.0300	.1300	.0080	.0500	.0110	.0010	.0060	-	.0020
22902	80/11/ 0	1.4800	-	-	.1120	.0500	.0510	-	.1200	-	-	.0090	-	.0200
22902	80/12/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
ARITH MEAN		.7200	.0009	.0016	.0456	.0518	.1542	.0083	.0773	.0022	.0101	.0099	-	.0236
STD DEV		.4622	.0015	.0009	.0337	.0319	.1014	.0055	.0902	.0030	.0092	.0112	-	.0501
GEO MEAN		.5810	.0003	.0014	.0345	.0425	.1229	.0066	.0538	.0015	.0070	.0069	-	.0067
MAXIMUM		1.4800	.0050	.0040	.1140	.1200	.3900	.0200	.3500	.0110	.0350	.0410	-	.1800
MINIMUM		.2400	.0001	.0010	.0190	.0100	.0400	.0020	.0300	.0010	.0010	.0020	-	.0020
# OF SAMPLE		10	10	10	11	11	11	10	11	10	10	9	-	11
VOL WT MEAN		.4374	.0007	.0012	.0321	.0548	.1148	.0060	.0506	.0020	.0081	.0105	-	.0071

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22953	80/ 1/ 0	.5000	.0006	.0027	.0140	.0600	.1100	.0100	.0100	.0007	.0058	-	-	.0080
22953	80/ 2/ 0	1.8400	.0015	.0050	.1800	.0500	.3500	.0170	.3300	.0020	.0140	.0150	-	.0220
22953	80/ 3/ 0	.5500	.0004	.0010	.0730	.0100	.0600	.0050	.0400	.0010	.0100	.0020	-	.0080
22953	80/ 4/ 0	.4400	.0002	.0020	.0270	.0300	.0750	.0040	.0400	.0010	.0090	.0050	-	.0020
22953	80/ 5/ 0	1.0800	.0003	.0010	.0560	.0400	.3750	.0130	.0500	.0010	.0080	.0230	-	.0080
22953	80/ 6/ 0	.6500	.0002	.0020	.0350	.0800	.1150	.0060	.1100	.0010	.0090	.0009	-	.0020
22953	80/ 7/ 0	.3300	.0002	.0010	.0210	.0500	.0450	.0020	.0600	.0010	.0060	.0280	-	.0020
22953	80/ 8/ 0	.6500	.0004	.0020	.0530	.0800	.1600	.0080	.1100	.0040	.0140	.0170	-	.0020
22953	80/ 9/ 0	.5600	.0003	.0010	.0080	.1400	.0950	.0050	.1400	.0010	.0060	.0610	-	.0090
22953	80/10/ 0	.5600	.0001	.0030	.0310	.0400	.1050	.0080	.0900	.0030	.0070	.0080	-	.0070
22953	80/11/ 0	2.0500	.0006	.0030	.3890	.0390	-	.0280	.1000	.0020	.0230	.0880	-	.0040
22953	80/12/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
ARITH MEAN		.8373	.0004	.0022	.0806	.0581	.1470	.0094	.0982	.0014	.0102	.0248	-	.0067
STD DEV		.5535	.0004	.0012	.1075	.0325	.1110	.0071	.0821	.0010	.0049	.0269	-	.0054
GEO MEAN		.7055	.0003	.0019	.0435	.0488	.1167	.0076	.0713	.0014	.0093	.0120	-	.0050
MAXIMUM		2.0500	.0015	.0050	.3890	.1400	.3750	.0280	.3300	.0040	.0230	.0880	-	.0220
MINIMUM		.3300	.0001	.0010	.0080	.0100	.0450	.0020	.0100	.0007	.0058	.0009	-	.0020
# OF SAMPLE		11	11	11	11	11	10	11	11	11	11	10	-	11
VOL WT MEAN		.6301	.0003	.0018	.0559	.0469	.1071	.0066	.0746	.0015	.0094	.0141	-	.0043

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22954	80/ 1/ 0	.7500	.0002	.0013	.0031	.0600	.1200	.0200	.0050	.0005	.0035	-	-	.0040
22954	80/ 2/ 0	1.5000	.0008	.0020	.3900	.0800	.2400	.0310	.2100	.0010	.0440	.0390	-	.0230
22954	80/ 3/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22954	80/ 4/ 0	.3000	.0002	.0040	.0490	.0300	.0550	.0040	.0400	.0010	.0080	.0040	-	.0020
22954	80/ 5/ 0	1.0500	.0007	.0020	.0450	.0800	.2000	.0130	.0400	.0010	.0050	.0170	-	.0100
22954	80/ 6/ 0	.3400	.0001	.0010	.0290	.0400	.0650	.0040	.0500	.0010	.0040	.0030	-	.0020
22954	80/ 7/ 0	.2700	.0004	.0020	.0210	.0080	.0350	.0020	.5000	.0010	.0060	.0080	-	.0020
22954	80/ 8/ 0	.2300	.0001	.0020	.0160	.0200	.0350	.0020	.0200	.0020	.0070	.0010	-	.0020
22954	80/ 9/ 0	.2900	.0001	.0020	.0090	.0300	.0450	.0030	.0300	.0010	.0060	.0020	-	.0170
22954	80/10/ 0	.2700	.0001	.0010	.0380	.1200	.0600	.0050	.1100	.0010	.0040	.0570	-	.0200
22954	80/11/ 0	1.1700	-	-	-	.1600	.1750	-	.1000	-	-	.0490	-	-
22954	80/12/ 0	.4800	.0001	.0030	.1350	.2200	.1050	.0010	.2100	.0010	.0014	.0190	-	.0230
ARITH MEAN		.6045	.0003	.0020	.0755	.0771	.1050	.0085	.1195	.0010	.0089	.0219	-	.0107
STD DEV		.4245	.0003	.0009	.1109	.0627	.0724	.0094	.1382	.0004	.0118	.0234	-	.0087
GEO MEAN		.4824	.0002	.0019	.0334	.0530	.0834	.0049	.0624	.0010	.0057	.0100	-	.0067
MAXIMUM		1.5000	.0008	.0040	.3900	.2200	.2400	.0310	.5000	.0020	.0440	.0490	-	.0230
MINIMUM		.2300	.0001	.0010	.0031	.0080	.0350	.0010	.0050	.0005	.0014	.0010	-	.0020
# OF SAMPLE		11	10	10	10	11	11	10	11	10	10	10	-	10
VOL WT MEAN		.3514	.0002	.0021	.0344	.0459	.0624	.0041	.0988	.0013	.0062	.0103	-	.0068

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22956	80/ 1/ 0	1.3500	.0002	.0021	.0150	.0400	.4600	.0200	.0250	.0005	.0066	-	-	.0080
22956	80/ 2/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22956	80/ 3/ 0	.3900	.0003	.0020	.0260	.0100	.1000	.0040	.0500	.0010	.0090	.0050	-	.0040
22956	80/ 4/ 0	2.2000	.0002	.0010	.0180	.0400	.9900	.0110	.0800	.0010	.0050	.0110	-	.0090
22956	80/ 5/ 0	1.8000	.0004	.0020	.0840	.4200	.7500	.0140	.1800	.0010	.0030	-	-	.0140
22956	80/ 6/ 0	.2000	.0002	.0020	.0380	.0800	.1800	.0040	.0600	.0040	.0190	.0040	-	.0040
22956	80/ 7/ 0	.5000	.0001	.0010	.0240	.0300	.1500	.0040	.0400	.0010	.0060	.0190	-	.0020
22956	80/ 8/ 0	.3400	.0001	.0040	.0290	.0300	.1100	.0040	.4000	.0010	.0009	.0190	-	.0070
22956	80/ 9/ 0	.5300	.0001	.0040	.0190	.1700	.1300	.0060	.0400	.0010	.0040	.0950	-	.0090
22956	80/10/ 0	.4900	.0001	.0010	.0480	.0400	.1300	.0080	.0800	.0010	.0080	.0200	-	.0150
22956	80/11/ 0	1.2800	-	-	-	.0500	.3300	-	.1000	-	-	.0100	-	.0200
22954	80/12/ 0	.8300	-	-	-	.0300	.3500	-	.1400	-	-	.0100	-	-
ARITH MEAN		.9009	.0002	.0026	.0334	.0891	.3345	.0088	.1105	.0013	.0071	.0214	-	.0094
STD DEV		.6311	.0002	.0019	.0204	.1122	.2805	.0055	.1029	.0010	.0048	.0264	-	.0050
GEO MEAN		.4993	.0002	.0020	.0289	.0539	.2458	.0074	.0802	.0011	.0055	.0135	-	.0082
MAXIMUM		2.2000	.0004	.0040	.0840	.4200	.9900	.0200	.4000	.0040	.0190	.0950	-	.0200
MINIMUM		.2000	.0001	.0010	.0150	.0100	.1000	.0040	.0250	.0005	.0009	.0040	-	.0020
# OF SAMPLE		11	9	9	9	11	11	9	11	9	9	9	-	10
VOL WT MEAN		.7163	.0002	.0027	.0334	.0780	.2837	.0068	.1223	.0016	.0082	.0209	-	.0087

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22958	80/ 1/ 0	1.1500	.0016	.0010	.0032	.0600	.3800	.0200	.0250	.0008	.0047	-	-	.0070
22958	80/ 2/ 0	1.9000	.0063	.0040	.1200	.0400	.7700	.0230	.3700	.0030	.0220	.0040	-	.3200
22958	80/ 3/ 0	.3500	.0014	.0020	.0520	.0100	.0800	.0040	.0400	.0010	.0080	.0040	-	.0090
22958	80/ 4/ 0	.4600	.0003	.0020	.0270	.0400	.1250	.0040	.0400	.0010	.0090	.0070	-	.0080
22958	80/ 5/ 0	1.8500	.0005	.0010	.0650	.1100	.4500	.0120	.0500	.0010	.0030	.0410	-	.0010
22958	80/ 6/ 0	.5800	.0008	.0020	.0510	.0400	.1800	.0040	.0400	.0010	.0140	.0100	-	.0040
22958	80/ 7/ 0	.5200	.0012	.0010	.0400	.0300	.1450	.0040	.0400	.0010	.0080	.0110	-	.0030
22958	80/ 8/ 0	.4100	.0004	.0020	.0130	.0300	.1300	.0040	.0400	.0010	.0100	.0170	-	.0090
22958	80/ 9/ 0	.2800	.0001	.0090	.0050	1.1200	.1450	.0030	.3000	.2100	.0010	.2320	-	.0190
22958	80/10/ 0	.4000	.0002	.0010	.0340	.0300	.0700	.0080	.0700	.0040	.0090	.0050	-	.0230
22958	80/11/ 0	.9400	.0020	.0020	.1030	.0700	.2850	.0080	.4000	.0100	.0190	-	-	.0020
22958	80/12/ 0	.2400	.0001	.0020	.0360	.0100	.0750	.0040	.1200	.0010	.0090	.0056	-	.0110
ARITH MEAN		.7583	.0012	.0024	.0458	.1342	.2529	.0087	.1444	.0194	.0097	.0339	-	.0348
STD DEV		.5413	.0016	.0021	.0346	.2984	.2231	.0062	.1748	.0575	.0058	.0669	-	.0842
GEO MEAN		.5977	.0006	.0019	.0302	.0474	.1829	.0070	.0803	.0023	.0076	.0124	-	.0089
MAXIMUM		1.9000	.0063	.0090	.1200	1.1200	.7700	.0230	.4000	.2100	.0220	.2320	-	.3200
MINIMUM		.2400	.0001	.0010	.0032	.0100	.0700	.0030	.0250	.0008	.0010	.0040	-	.0010
# OF SAMPLE		12	12	12	12	12	12	12	12	12	12	10	-	12
VOL WT MEAN		.5328	.0007	.0023	.0374	.1252	.1424	.0059	.0866	.0184	.0091	.0292	-	.0134

PRECIP TR METAL DATA (MG/L)

(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22959	80/ 1/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 2/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 3/ 0	2.0300	.0004	.0020	.1040	.3700	.2600	.0170	.3000	.0010	.0130	.0009	-	.0150
22959	80/ 4/ 0	.7400	.0002	.0020	.0340	.1300	.1350	.0060	.0800	.0010	.0080	.0990	-	.0110
22959	80/ 5/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 6/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 7/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 8/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/ 9/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/10/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/11/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22959	80/12/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
ARITH MEAN		1.3850	.0003	.0020	.0710	.2500	.1975	.0115	.1900	.0010	.0105	.0499	-	.0130
STD DEV		.6450	.0001	.0000	.0350	.1200	.0625	.0055	.1100	.0000	.0025	.0490	-	.0020
GEO MEAN		1.2254	.0003	.0020	.0618	.2193	.1874	.0101	.1549	.0010	.0102	.0094	-	.0128
MAXIMUM		2.0300	.0004	.0020	.1040	.3700	.2600	.0170	.3000	.0010	.0130	.0990	-	.0150
MINIMUM		.7400	.0002	.0020	.0340	.1300	.1350	.0060	.0800	.0010	.0080	.0009	-	.0110
# OF SAMPLE		2	2	2	2	2	2	2	2	2	2	2	-	2
VOL WT MEAN		1.0794	.0003	.0020	.0544	.1931	.1479	.0089	.1379	.0010	.0093	.0732	-	.0121

PRECIP TR METAL DATA (MG/L)
(1980)

STAT'N NUMBER	DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN
22960	80/ 1/ 0	.2500	.0007	.0024	.0130	.0400	.0400	.0050	.0050	.0005	.0110	-	-	.0040
22960	80/ 2/ 0	1.9500	.0043	.0030	.1640	.1800	.4500	.0190	.4500	.0030	.0430	.0150	-	.0500
22960	80/ 3/ 0	.4000	.0009	.0010	.0580	.0100	.0500	.0450	.0300	.0010	.0140	.0040	-	.0430
22960	80/ 4/ 0	.2400	.0002	.0010	.0230	.0300	.0450	.0040	.0300	.0010	.0110	.0060	-	.0090
22960	80/ 5/ 0	1.2400	.0003	.0010	.0700	.0800	.3400	.0130	.0500	.0010	.0050	.0390	-	.0110
22960	80/ 6/ 0	.6200	.0004	.0010	.0240	.0600	.1300	.0040	.5000	.0010	.0010	.0100	-	.0060
22960	80/ 7/ 0	.3300	.0004	.0010	.0220	.0400	.0700	.0220	.0300	.0010	.0100	.0010	-	.0020
22960	80/ 8/ 0	.0100	.0004	.0020	.0230	.0300	.0700	.0020	.0500	.0010	.0080	.0040	-	.0090
22960	80/ 9/ 0	.2900	.0001	.0010	.0090	.0300	.0450	.0030	.0300	.0010	.0600	.0020	-	.0190
22960	80/10/ 0	.4800	.0001	.0030	.0360	.1100	.0750	.0050	.0900	.0010	.0060	.0790	-	.0070
22960	80/11/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
22960	80/12/ 0	-	-	-	-	-	-	-	-	-	-	-	-	-
ARITH MEAN		.5810	.0008	.0016	.0444	.0410	.1335	.0142	.1245	.0011	.0189	.0178	-	.0140
STD DEV		.5525	.0012	.0008	.0438	.0483	.1351	.0182	.1758	.0004	.0214	.0243	-	.0159
GEO MEAN		.3325	.0004	.0015	.0311	.0459	.0919	.0078	.0538	.0010	.0104	.0074	-	.0102
MAXIMUM		1.9500	.0043	.0030	.1640	.1800	.4500	.0450	.5000	.0030	.0430	.0790	-	.0500
MINIMUM		.0100	.0001	.0010	.0090	.0100	.0400	.0020	.0050	.0005	.0010	.0010	-	.0020
# OF SAMPLE		10	10	10	10	10	10	10	10	10	10	9	-	10
VOL WT MEAN		.3252	.0004	.0015	.0289	.0440	.0872	.0104	.0943	.0010	.0143	.0127	-	.0114

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